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Ontario Geological Survey
Open File Report 6178

Regional Modern Alluvium and Till Sampling Survey of the Tweed Area, Southeastern Ontario

2006

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ONTARIO GEOLOGICAL SURVEY

Open File Report 6178

Regional Modern Alluvium and Till Sampling Survey of the Tweed Area, Southeastern Ontario

by

V.E. Felix, J.L. Reid and R.M. Easton

2006

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Miscellaneous Release—Data 199

Modern Alluvium and Till Data Release, Tweed Area, Southeastern Ontario

by V.E. Felix and J.L. Reid

This release consists of data related to kimberlite indicator minerals (KIMs), metamorphic/magmatic massive sulphide indicator minerals (MMSIM®[1]) and gold grains recovered from 250 samples collected over an area covering approximately 4700 km^2 in the Tweed area, southeastern Ontario. The data are being released in conjunction with Open File Report 6178. Files on this release contain information on abbreviations used; sample site locations; KIM counts; mineral chemistry for KIMs (e.g., garnets, chromites, Mg-ilmenites, olivines, and pyroxenes); MMSIMs picked; mineral chemistry for MMSIMs, gahnite; and gold grains. Data are available in Microsoft® Excel (*.xls*) file format on 1 CD-ROM.

These data are available separately from the report.

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[1] MMSIM is a registered trademark of Overburden Drilling Management Limited, Nepean, Ontario.

Abstract

Between June and August 2004, the Ontario Geological Survey (OGS) completed a regional modern alluvium sampling and till survey in the Tweed area, southeastern Ontario. The primary objective of this survey was to determine the presence of kimberlite indicator minerals (KIMs), metamorphic/magmatic massive sulphide indicator minerals (MMSIM®[1]) and gold grains. The survey area covered approximately 4700 km^2. A total of 161 modern alluvium, 74 till and 15 glaciofluvial sand and gravel samples were collected.

Results indicate that the potential for finding kimberlite bodies or related rock in the area is low, as important KIMs and diamond potential indicators, such as G10 garnets and diamond inclusion chromites, were not recovered from any of the samples.

A number of metamorphic/magmatic massive sulphide indicator minerals were, however, recovered. Areas that exhibit anomalous distributions of MMSIM® are highlighted in the report. Recoveries of gold grains from this survey are quite modest, however, further exploration is warranted in Grimsthorpe and Kaladar townships, where high numbers of pristine grains were found.

Lastly, it should be noted that during sample processing a number of samples were noted to have heavy mineral and/or metal contamination resulting from historic activities in the study area. Readers are urged to use caution when reviewing and using the data provided.

Data in the appendixes are available separately in digital format as Miscellaneous Release—Data (MRD) 199.

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[1] MMSIM is a registered trademark of Overburden Drilling Management Limited, Nepean, Ontario

Regional Modern Alluvium and Till Sampling of the Tweed Area, Southeastern Ontario

V.E. Felix[1], J.L. Reid[2] and R.M. Easton[3]
Ontario Geological Survey
Open File Report 6178
2006

[1] Sedimentary Geoscience Section, Ontario Geological Survey
[2] formerly Sedimentary Geoscience Section, Ontario Geological Survey
[3] Precambrian Geoscience Section, Ontario Geological Survey

Introduction

In Ontario, it has been noted that a significant number of kimberlite clusters and other rocks (i.e., lamprophyres) thought to have potential to host diamonds lie within a broad regional trend that extends from near Attawapiskat in the north, to the Belleville area and beyond, in the southeast (Sage 1999). This regional trend, oriented at 325°, is not defined by a specific geological or geophysical feature, however, along its length, it is marked by a number of major structural features (e.g., the Lake Timiskaming Structural Zone) in northeastern Ontario. Kimberlite clusters occur along this regional trend at Attawapiskat, Coral Rapids, Matheson, Kirkland Lake, Temiskaming, Cobalt, Picton and Syracuse in New York State (Sage 1999). The kimberlites tend to be located where faults and lineaments or major lithologic boundaries intersect the regional trend.

In southeastern Ontario, the Tweed area and, specifically, Tudor and Grimsthorpe townships, have been areas of interest with respect to kimberlite and diamond exploration since the mid-1990s. In addition, a kimberlite dike has been identified in the Essroc quarry at Picton.

West- to northwest-trending lineaments found in the region northeast of Tweed are interpreted as a system of faults related and parallel to the Ottawa–Bonnechere Graben system. This feature is known as one of the region's principal fault zones and is likely rooted in the lower crust or upper mantle. Such a structure would provide a conduit for mantle-derived kimberlite, lamproite and lamprophyre magmas that are known to transport diamonds to higher crustal levels. On the other hand, the absence of a thick lithospheric root or substantial amounts of Archean crust in the lower crust between the Central Metasedimentary Belt of the Grenville Province (White et al. 2000) are both negative indicators with respect to the development of diamondiferous kimberlites.

Because of the presence of known kimberlites, deep-seated structural zones and the northwest regional trend, southeastern Ontario provides a potentially favourable environment for diamond exploration. As well, the area has historically seen production of various mineral commodities, including gold, and is favourable for further mineral exploration.

Field work was completed under the direction of J.L. Reid who left the Ontario Geological Survey in the winter of 2005.

Background and Current Study

An overburden sampling survey involves sampling surficial materials, notably modern alluvium stream sediments and glacial till for a variety of indicator minerals. For diamond exploration, a suite of kimberlite indicator minerals (KIM) is targeted for recovery. These include pyrope and eclogitic garnets, magnesium ilmenite, chromite, chromian diopside (Cr-diopside), forsteritic olivine and diamond. The presence of these indicator minerals in overburden samples can be used to determine the prospect for and proximity to any diamond-bearing kimberlites in an area. By taking into account the direction, distance and style of transport and depositional history of the material being sampled, indicator minerals may be traced upstream and up-ice to their source (Morris and Kaszycki 1997). To assess the precious and base metal mineral potential of a region, other heavy mineral assemblages, including gold grains and metamorphic/magmatic massive sulphide indicator minerals (MMSIM®[1]), are sought for recovery from collected samples.

To evaluate the diamond and other mineral potential of the Tweed area in southeastern Ontario, field work for a regional overburden indicator mineral survey was completed by the Ontario Geological Survey during the summer of 2004 (Figure 1; Figure 2, back pocket). The purpose of this study is to establish a baseline of data that will provide regional information on the types and distribution of kimberlite indicator minerals, gold grains and MMSIM® found in overburden sediments.

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[1] MMSIM is a registered trademark of Overburden Drilling Management Limited, Nepean, Ontario

The Tweed study area is represented on 8, 1:50 000 scale National Topographic System (NTS) map sheets. Coverage of the study area is provided by the Tichborne (31 C/10), Bannockburn (31 C/12), Bon Echo (31 C/14, formerly Mazinaw), and Kaladar sheets (31 C/11), as well as, the northwest corner of the Sydenham sheet (31 C/7), the southeast half of the Coe Hill sheet (31 C/13), the northeast part of the Campbellford sheet (31 C/5) and the north part of the Tweed sheet (31 C/6). Geological compilation

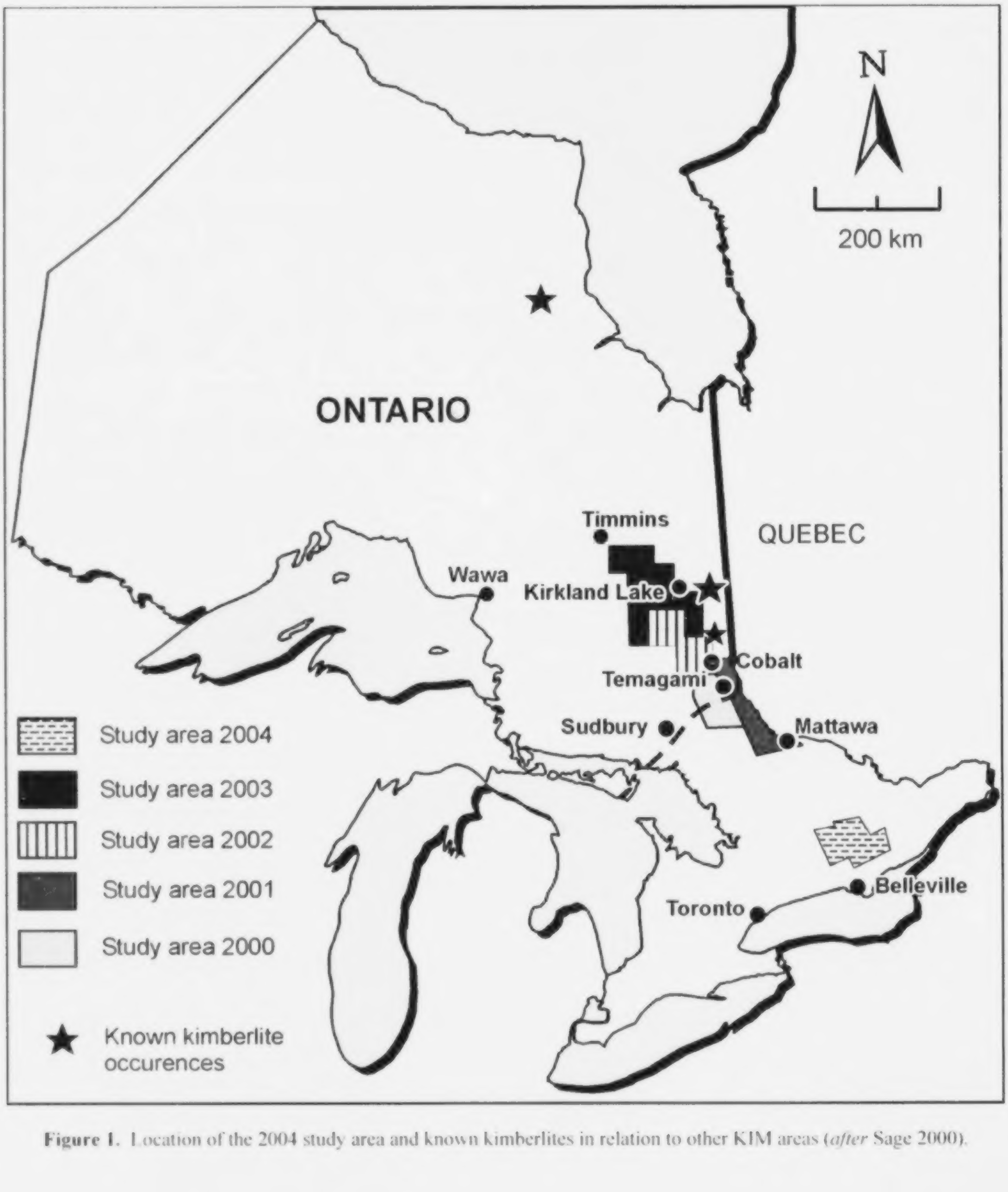

N
200 km
ONTARIO
QUEBEC
Timmins
Wawa
Kirkland Lake
Cobalt
Temagami
Sudbury
Mattawa
Belleville
Toronto
Study area 2004
Study area 2003
Study area 2002
Study area 2001
Study area 2000
Known kimberlite occurences

Figure 1. Location of the 2004 study area and known kimberlites in relation to other KIM areas (*after* Sage 2000).

maps, published by the Ontario Geological Survey at 1:50 000 scale, are available for 6 of these NTS sheets, as follows: Tichborne (Easton 2001c); Bannockburn (Lumbers and Vertolli 2000b); Bon Echo (Easton 2001a), Kaladar (Easton 2001b); Coe Hill (Lumbers and Vertolli 2000a) and Cambellford (Lumbers and Vertolli 2000c).

A network of primary and secondary roads and all-terrain vehicle (ATV) trails provided reasonable access to the study area. The presence of numerous lakes and rivers provided boat access to otherwise remote locations.

Physiography

The study area is situated in a physiographic region of the Canadian Shield known as the Laurentian Region (Bostock 1976) and, more specifically, within the division known as the Laurentian Highlands. The Laurentian Highlands extend south of the Ottawa River and include the spur of hills formed of Precambrian rocks that cross the St. Lawrence River to form the Thousand Islands. To the south, near Lake Ontario, the highlands gradually disappear beneath the cover of Paleozoic strata (Thurston 1991).

The southeastern edge of the study area is deeply and widely incised by several large rivers that gather volume in the high undulating interior and flow easterly into the St. Lawrence River. As a result, this area has a hilly appearance, with relief commonly between 340 to 680 m above sea level (asl) (Bostock 1976).

Physiographically, the southwest portion of the study area, including Madoc and Huntingdon townships, is divided into 2 parts by the Paleozoic–Precambrian contact that runs along the south side of Moira Lake. The area to the north of Moira Lake forms part of the Precambrian peneplain and slopes southward dropping in elevation from 305 to 205 m. The region south of Moira Lake is underlain by flat-lying Paleozoic limestone of the Lake Ontario homocline (Hewitt 1968). The Moira and Black rivers and their tributaries, which flow into Lake Ontario, drain the area.

The northwest part of the study area lies within the Cashel peneplain division of the Lake Ontario homocline. The Cashel peneplain is a resurrected, glaciated Precambrian erosion surface with a local relief of about 30 m and a gentle southward slope (Lumbers 1969). There is a gradual increase in elevation from south to north that is locally interrupted by resistant rock masses, mainly plutonic rocks, that have higher elevations than those of the surrounding country (Lumbers 1969). Most of the lake basins in this area occur at contacts between marble and rocks more resistant to erosion than marble. Other lakes lie in the cores of synclinal folds developed in underlying metasediments. This part of the study area is drained by 3 major river systems: the Moira, Trent and Madawaska (Lumbers 1969). The Madawaska River system forms part of the Ottawa River drainage basin while the other 2 belong to the Lake Ontario drainage basin (Lumbers 1969).

Table 1. Summary of the Precambrian geology and mineral deposits of the study area. Plutonic suite names *from* Easton (1992).

Terrane, Domain	Age and Type of Supracrustal Rocks	Age and Type of Plutonic Rocks	Metamorphic Grade	Mineral Deposits
Elzevir terrane Southern Belmont domain	Roughly equal proportions of mafic and felsic tholeiitic and calc-alkalic metavolcanic rocks, calcite and dolomite marbles, and clastic metasedimentary rocks deposited between 1290 and 1250 Ma. Minor iron formation	Elzevir suite intermediate to felsic plutons (1280–1250 Ma), Methuen suite felsic plutons (circa 1250 Ma), Lavant suite mafic intrusions (circa 1250 Ma), syenite, monzogranite and minor gabbro of the Frontenac suite (1180–1150 Ma).	Middle greenschist to lower amphibolite facies.	Past-production of pyrite for sulphuric acid production in Queensborough area. Potential for base metals in younger tholeiitic metavolcanic rocks. Past-production of gold in Deloro, Eldorado and Cordova mines area. Gold in Deloro area associated with arsenopyrite. Potential for Ni-Cu-PGE and Ti in mafic intrusions. Contact metasomatic iron skarns, including Marmora Mine. Talc production from Madoc area. Use of marbles for building stone. Wollastonite potential in marbles. Production of roofing granules from fine-grained mafic metavolcanic rocks at Havelock and Madoc, as well as from marbles in Madoc area. Past-production of fluorite in Madoc–Marmora area.
Northern Belmont domain	Roughly equal proportions of mafic and felsic tholeiitic and calc-alkalic metavolcanic rocks, calcite and dolomite marbles, and clastic metasedimentary rocks deposited between 1290 and 1250 Ma.	Elzevir suite intermediate to felsic plutons (1280–1250 Ma), Methuen suite felsic plutons (circa 1250 Ma), Lavant suite mafic intrusions (circa 1250 Ma), syenite, monzogranite and minor gabbro of the Frontenac suite (1180–1150 Ma).	Upper amphibolite facies.	Potential for Ni-Cu-PGE and Ti in mafic intrusions. Similar potential as southern Belmont domain, but fewer past-producers and fewer exploration targets.
Grimsthorpe domain	Predominantly tholeiitic, mafic metavolcanic and volcaniclastic rocks, minor clastic and carbonate metasedimentary rocks, all older than 1280 Ma.	Canniff Complex mafic to ultramafic plutons (>1280 Ma), Killer Creek suite mafic plutons (1280–1270 Ma), Elzevir suite intermediate to felsic plutons (1280–1250 Ma), syenite and monzo-granite of the Kensngton–Skootamata suite (1090–1070 Ma).	Middle greenschist to lower amphibolite facies.	Gold in western Grimsthorpe domain associated with major deformation zones and carbonate alteration. Potential for base metals in metavolcanic rocks. Potential for Ni-Cu-PGE in mafic intrusions. Talc in metamorphosed Canniff Complex ultramafic intrusions.
Mazinaw domain	Roughly equal proportions of mafic and felsic tholeiitic and calc-alkalic metavolcanic rocks, calcite and dolomite marbles, and clastic metasedimentary rocks deposited between 1290 and 1250 Ma. Also, clastic metasedimentary rocks of the younger Flinton Group deposited between 1150 and 1040 Ma.	Killer Creek suite mafic plutons (1280–1270 Ma), Elzevir suite intermediate to felsic plutons (1280–1250 Ma), Methuen suite felsic plutons (circa 1250 Ma), Lavant suite mafic intrusions (circa 1250 Ma).	Upper greenschist to upper amphibolite, lowest grade near Northbrook, increases to the northeast, east and southeast. Regional metamorphism at circa 1040 Ma, slow cooling (circa 940 Ma hornblende ages).	Gold near greenschist–amphibolite transition near Grimsthorpe–Mazinaw domain boundary, including past-producing Addington and Ore Chimney mines. Past-production of pyrite for sulphuric acid production in Sulphide area. Potential for base metals in younger tholeiitic metavolcanic rocks. Potential for porphyry copper and gold in Elzevir suite plutons. Potential for zinc in both Grenville Supergroup and Flinton Group marbles. Potential for Ni-Cu-PGE in mafic intrusions. Contact metasomatic iron skarns, including Summit Lake past-producing mine.
Sharbot Lake domain	Predominantly dolomite and calcite marbles, minor mafic metavolcanic rocks, minor clastic metasedimentary rocks and felsic metavolcanics, all deposited between 1270 and 1220 Ma.	Elzevir suite intermediate to felsic plutons (1280–1250 Ma), Lavant suite mafic to intermediate plutons (1250–1220 Ma), syenite, monzo-granite and minor gabbro of the Frontenac suite (1180–1150 Ma) and syenite and monzogranite of the Kensngton–Skootamatta suite (1090–1070 Ma).	Greenschist to middle amphiboite facies in north, middle amphibolite to amphibolite–granulite transition in south.	Zinc in marbles, including past-producing Long Lake zinc mine, and current production of high-purity calcite marble. Potential for wollastonite in marbles in contact aureoles of Frontenac and Kensington–Skootamatta suite plutons. Gold-copper potential in Robertson Lake mylonite zone, which forms the boundary between Mazinaw and Sharbot Lake domains.
Frontenac terrane	Platformal metasedimentary rocks, now quartzite, dominantly calcite marble and marble tectonic breccia, pyroxene gneiss, all deposited between 1300 and 1160 Ma.	Predominantly syenite, monzogranite and minor gabbro of the Frontenac suite (1180–1150 Ma) and syenite and monzogranite of the Kensngton–Skootamatta suite (1090–1070 Ma).	Moderate-pressure granulite facies (circa 1160 Ma), rapidly cooled (circa 1125 Ma based on hornblende cooling ages).	Graphite in marbles, building stone in granites, wollastonite ± zinc skarns in marble in contact aureoles of Frontenac and Kengsington–Skootamatta suite plutons.

Bedrock Geology

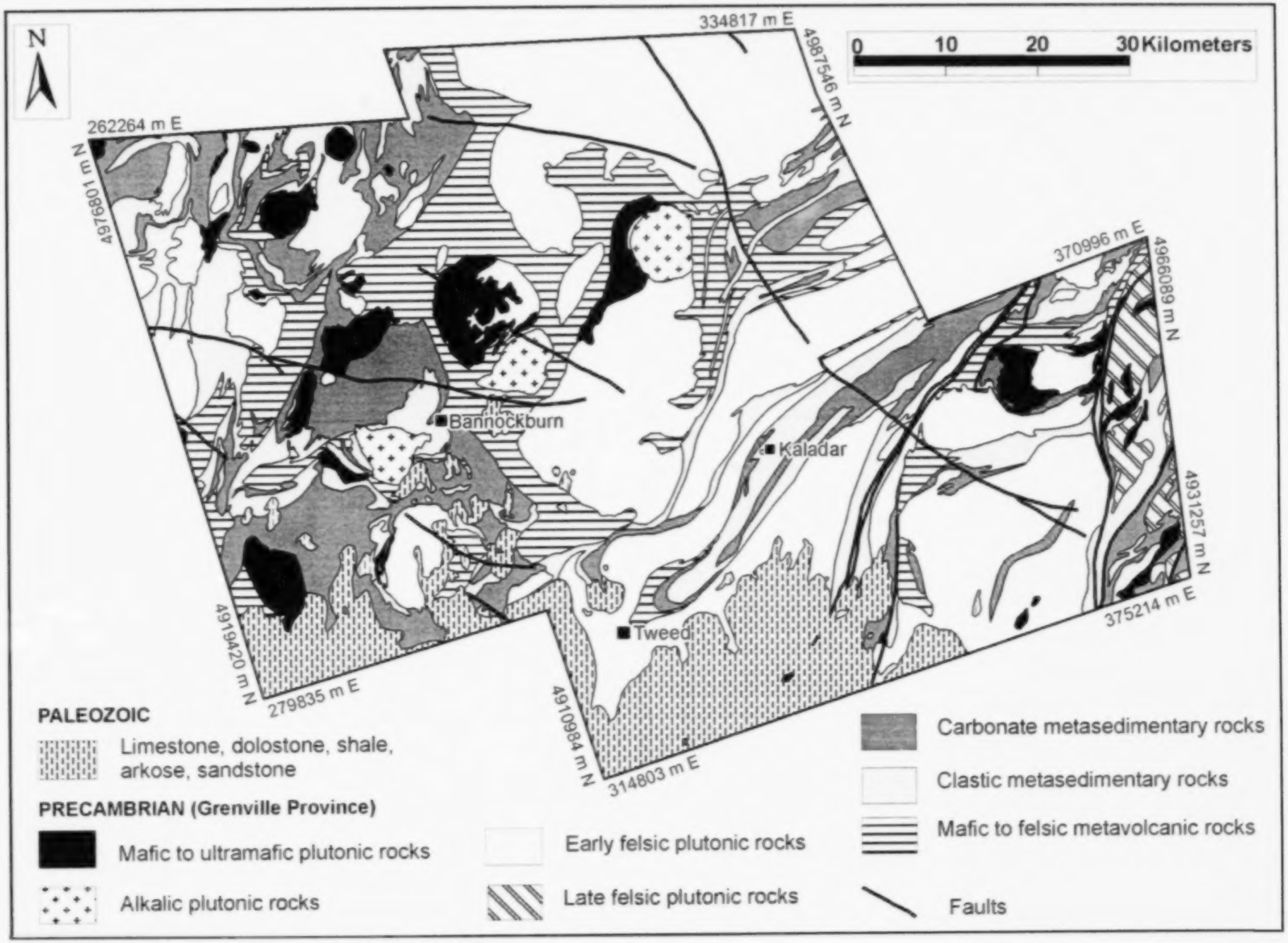
The oldest rocks in the study area are Neo- to Mesoproterozoic (0.57 to 1.3 Ga) in age and belong to the Central Metasedimentary Belt of the Grenville Province. Comprehensive reviews of the Grenville Province and its mineral deposits in Ontario are provided by Carr et al. (2000), Easton (1992), Easton and Fyon (1992) and Sangster, Gauthier and Gower (1992). Table 1 provides a summary of the geology and significant mineral deposits present within the study area. Figure 3 shows the regional bedrock geology of the study area.

The Central Metasedimentary Belt is a major Mesoproterozoic accumulation of metavolcanic and metasedimentary rocks, deposited between 1300 and 1050 Ma, that have been invaded by several intrusive suites, which range in age from 1280 to 1070 Ma (Easton 1992). The supracrustal rocks within the Central Metasedimentary Belt consist of the Grenville Supergroup (older than 1160 Ma) and the geographically restricted Flinton Group (younger than 1160 Ma).

Although the study area lies entirely within the Central Metasedimentary Belt, it would be misleading to think of the bedrock geology as relatively uniform across the entire area. In fact, the bedrock geology of the study area is quite complex. Within the study area, the Central Metasedimentary Belt is divided into 2 terranes: Frontenac and Elzevir (Figure 4). The Elzevir terrane is characterized by metavolcanic and metasedimentary rocks, mostly deposited in back-arc or arc settings, which were deposited between 1300 and 1200 Ma, and which are cut by plutonic rocks ranging in age from 1280 to 1070 Ma. Metamorphic grade in Elzevir terrane ranges from greenschist to upper amphibolite facies. In contrast, Frontenac terrane lacks metavolcanic rocks, and its metasedimentary sequence was deposited in a continental margin setting. Frontenac terrane is cut by plutonic rocks ranging in age from 1180 to 1070 Ma, and has been subjected to moderate-pressure granulite-facies metamorphism at circa 1160 Ma. It is believed that Frontenac and Elzevir terrane were only juxtaposed at 1160 Ma (Carr et al. 2000).

On top of this first-order terrane subdivision, Elzevir terrane is, in turn, subdivided into 4 domains, which, from west to east, are Belmont, Grimsthorpe, Mazinaw and Sharbot Lake (*see* Table 1; *see* Figure 4). Ductile and/or brittle shear zones, generally north- to northeast-trending, form the boundaries to these domains. These boundary zones tend to be topographic lows, and many of the transportation corridors in the study area are found in or near these boundary zones. Distribution of rock type, age, plutonic history, mineral deposits, deformation and metamorphism vary considerably between the different domains. For example, some of the lowest grade supracrustal rocks in the Grenville Province occur in the Marmora–Madoc area of southern Belmont domain. Mazinaw domain is unique in having metasedimentary rocks of the younger Flinton Group, and recording a circa 1040 Ma young, high-grade metamorphic event absent from the other domains. Both Belmont and Sharbot Lake domains are characterized by an abundance of carbonate metasedimentary rocks, whereas these rocks are rare within Grimsthorpe domain. These abrupt changes in geology across relatively short distances need to be taken into account when interpreting the results of the modern alluvium survey over the study area.

The southern and southwestern parts of the survey area straddle the Paleozoic–Precambrian contact (*see* Figures 3 and 4). Overlying Precambrian bedrock south of the contact are Middle Ordovician rocks belonging to, in ascending order, the Shadow Lake, Gull River and Bobcaygeon formations (Ontario Geological Survey 1991). The lowermost Shadow Lake Formation consists of quartz-rich, red siltstone and shale, arkosic sandstone and polymictic conglomerate (Lumbers 1969). The overlying Gull River Formation consists of lithographic and sublithographic limestone and dolostone, whereas the Bobcaygeon Formation consists of crystalline and bioclastic limestone (Carson 1981).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279835 m E
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Bannockburn
Kaladar
Tweed
PALEOZOIC
Limestone, dolostone, shale, arkose, sandstone
PRECAMBRIAN (Grenville Province)
Mafic to ultramafic plutonic rocks
Alkalic plutonic rocks
Early felsic plutonic rocks
Late felsic plutonic rocks
Carbonate metasedimentary rocks
Clastic metasedimentary rocks
Mafic to felsic metavolcanic rocks
Faults

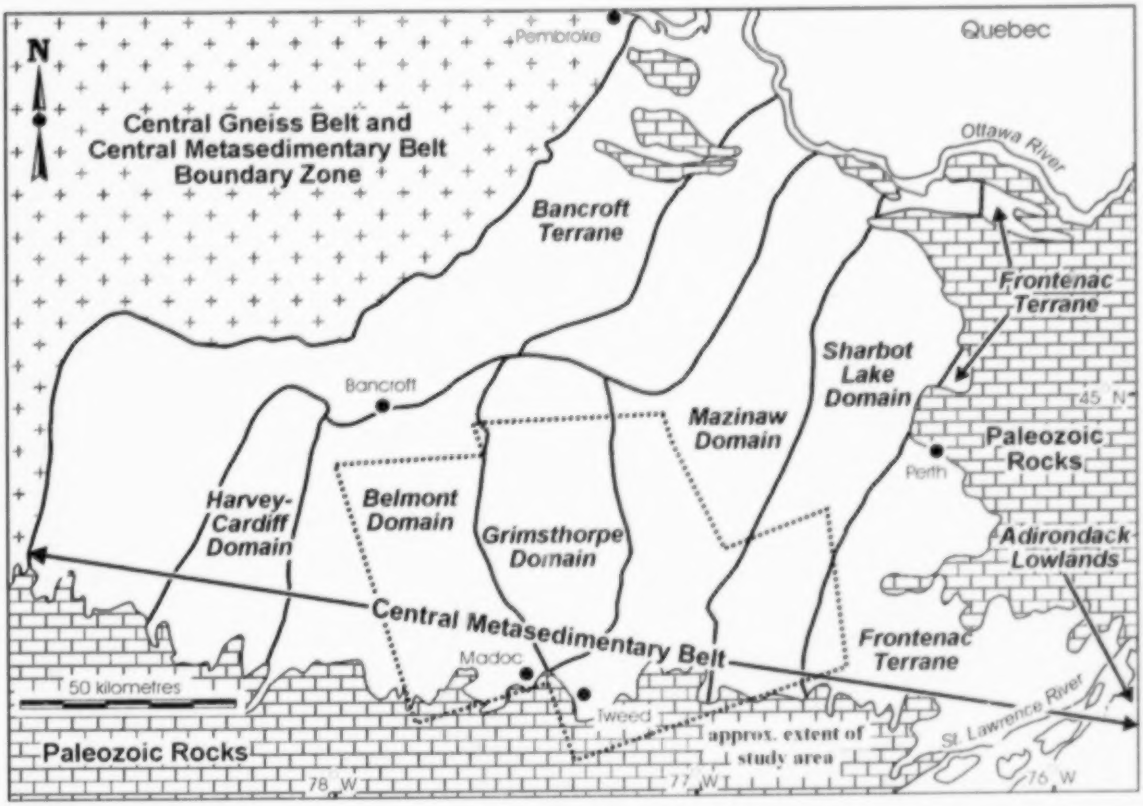
Figure 3. Regional bedrock geology of the study area (*after* Ontario Geological Survey 1991).

Economic Geology

The study area has seen a long history of mineral exploration and production, dating from 1850 to the present-day (Easton and Fyon 1992; Lang et al. 1976), including Ontario's first gold mine, located at Eldorado, in 1862. Early mineral production was generally from small mining operations, most of which were active between 1880 and 1930, chiefly producing, in addition to building stone, fluorite, gold, iron, lead, pyrite (for sulphuric acid production) and talc. Inventories of more significant operations and prospects can be found in Carter (1984) and Malzack, Carter and Springer (1985). Table 1 summarizes the mineral potential of the various terranes and domains of the Central Metasedimentary Belt within the study area. Some of the more significant operations are highlighted below.

Numerous contact metasomatic magnetite deposits occur in the southern part of the Grenville Province (Easton and Fyon 1992; Sangster, Gauthier and Gower 1992). These deposits are relatively small and many were worked out during the 19th century. At Marmora, a very large deposit of magnetite was discovered beneath 40 m of Paleozoic limestone by an aeromagnetic survey conducted during 1953. Mining of the deposit began in 1955 and operations ceased in 1978. The mass of ore was over 800 m long and 125 m wide and contained an average of 40% iron. At the height of production, approximately half a million tons of pellets containing 65% iron was produced annually (Lang et al. 1976).

Fluorite, barite and celestite have been found in veins that occur within Precambrian and Paleozoic rocks of the study area. Production from these veins occurred mainly during the Second World War. Production ceased in 1961 after an estimated 120 000 tons had been mined (Lang et al. 1976).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Central Metasedimentary Belt
Boundary Zone
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Terrane
Frontenac
Terrane
Sharbot
Lake
Domain
Bancroft
Mazinaw
Domain
45° N
Paleozoic
Rocks
Perth
Harvey-
Cardiff
Domain
Belmont
Domain
Grimsthorpe
Domain
Adirondack
Lowlands
Central Metasedimentary Belt
Frontenac
Terrane
Madoc
50 kilometres
Tweed
St. Lawrence River
approx. extent of
study area
Paleozoic Rocks
78° W
77° W
76° W

Figure 4. Domain subdivisions in the Central Metasedimentary Belt showing location of the study area (*modified after* Easton 1992).

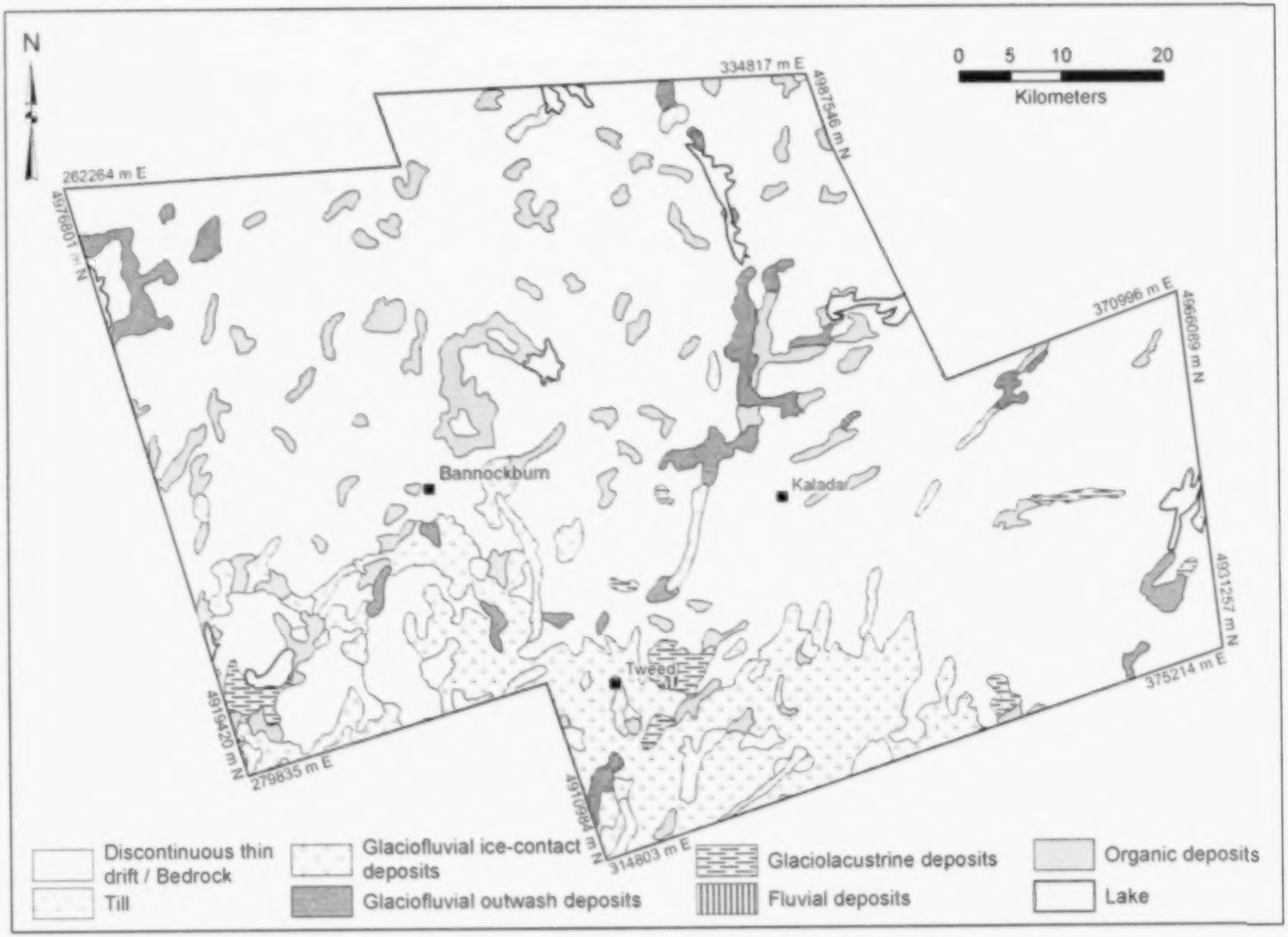
N
0 5 10 20
Kilometers
334817 m E
4987546 m N
262264 m E
4976801 m N
370996 m E
4966089 m N
4931257 m N
375214 m E
4919420 m N
279835 m E
4910984 m N
314803 m E
Bannockburn
Kaladar
Tweed
Discontinuous thin drift / Bedrock
Till
Glaciofluvial ice-contact deposits
Glaciofluvial outwash deposits
Glaciolacustrine deposits
Fluvial deposits
Organic deposits
Lake

Figure 5. Generalized Quaternary geology of the study area (*after* Barnett, Henry and Babuin 1991).

Talc has been produced from Precambrian rocks near Madoc for over 100 years. Canada Talc, a division of Dynatec, presently operates a talc mining operation just south of Madoc at the Henderson and Conley mines (Lang et al. 1976).

Between 1973 and 1974, roughly 94 000 short tons of zinc ore was produced from the Long Lake mine in Sharbot Lake domain (Carter 1984).

A number of quarries in the Tweed, Kaladar and Bannockburn areas of southeastern Ontario have extracted limestone and dolostone from the lower member of the Bobcaygeon Formation and the middle and upper members of the Gull River Formation. Products included railway ballast, concrete aggregate and road metal. A number of abandoned quarries including the Robindale, Crookston Main and Tweed are found in this area. Other smaller abandoned quarries are also found around Eldorado, Crookston and Madoc. A few large, active quarry operations exist in the study area. AECON, located in Marmora, quarries limestone for aggregate and traprock has been produced by I.K.O. Industries Ltd., from a quarry at Madoc since 1991 (Sangster et al. 2003). The Upper Canada Stone Co. operates a quarry just north of Madoc for the production of marble chips (terrazzo).

Sand and gravel production has occurred at many locations in the survey area (Liberty 1963), however, many of these sites are now depleted and have been abandoned.

Quaternary Geology

During the Wisconsinan Episode, the study area was periodically covered by glacial ice of the Laurentide Ice Sheet. Glacial deposits of the area are considered to be the result of the last glacial stage, the Late Wisconsinan (Barnett 1992). Two major lobes of the Late Wisconsinan ice-sheet affected the central and eastern parts of southern Ontario: the Lake Ontario lobe, which advanced westward into the Lake Ontario basin from the St. Lawrence and Ottawa valleys; and the Northern lobe, which advanced southward across the central part of southern Ontario to the Lake Ontario basin. The orientation of glacial striae and drumlins indicate that the study area was affected only by the Northern lobe (Lumbers 1969).

Glacial deposits of the southwestern portion of the study area consist mainly of bouldery ground moraine (till) and kame moraines (Figure 5). Within Madoc Township, the kame moraines have been exploited for sand and gravel (Hewitt 1968). Glacial deposits in the northwestern part of the survey area include till in the form of ground moraine and drumlins (Lumbers 1969). Locally, numerous small deposits of sand and gravel overlie and, in places, are interstratified with the ground moraine.

In the central part of the survey area, glacial deposits include ice-contact sediments, glaciofluvial outwash and till. Near Kaladar, 2 prominent sand-rich glaciofluvial outwash deposits are present. Other glacial features of this area include drumlins and eskers located near Tweed and Foxboro (Liberty 1963). Along the Skootamatta River and Little Skootamatta Creek, bedrock exposures display chattermarks and potholes (Wolff 1982a).

Regional Sampling Survey

The current regional modern alluvium and till survey, covering a total area of approximately 4700 km^2, was conducted in June, July and August 2004. A total of 250 samples (161 modern alluvium, 74 till and 15 glaciofluvial sand and gravel) were collected. Access to sample locations was achieved by truck, ATV and boat. The resulting distribution of collected samples provides very good regional coverage. Regional overburden sampling surveys provide data on the types, distribution and relative concentration of heavy minerals in a given region. The objective of regional surveys is to evaluate large regions quickly and inexpensively and define background and anomalous concentrations of kimberlitic indicator minerals, MMSIM® and gold grains.

The number of samples collected was predetermined by budget, access and time considerations, however, samples were collected over as broad an area as possible. The position of each sample was accurately recorded with a global positioning system (GPS) instrument set to North American Datum 1983 and 1927 (NAD83 and NAD27, respectively) and using NTS 1:50 000 scale map sheets situated in Universal Transverse Mercator (UTM) Zone 18. Sample numbers and locations (in UTM coordinates) are summarized in Appendix 1.

Sampling Methodology

Modern alluvium was chosen as the primary sampling media for this study as it provides a means of obtaining a fast, relatively inexpensive heavy mineral signature for individual drainage basins. The heavy mineral signature obtained from modern alluvium is a product of the erosion of both bedrock and overburden, and the subsequent transportation and deposition of the eroded material (Morris et al. 2000). A more detailed discussion of the controls on these processes can be found in Morris and Kaszycki (1997).

Points of heavy mineral deposition within streams were targeted for sample collection. Sampling points included the deepest part of the channel; longitudinal and point bars; and boulder, log and vegetation traps. Material was sieved in the field using a 5 mm mesh screen and the finer fraction (<5 mm) was retained (Photo 1). Sample weight ranged from 10 to 20 kg. At some sites, larger samples were collected to compensate for either a high percentage of fine-textured sand or silt material in the sediment or the dilution of heavy mineral grains caused by a high percentage of organic material. The <5 mm fraction of the sample was sent for heavy mineral processing to separate possible kimberlite and other indicator minerals. Where possible, approximately 50 pebbles were collected from the coarser (>5 mm) fraction at each sample site for

Photo 1. Photograph of sample site illustrating sieving.

pebble lithology classification. Pebble lithologies classified to date indicate that, typically, stream deposits are locally derived. In addition, at each site, a small portion of the stream sediment was panned and the resultant "fine-fraction" concentrate retained. At those sites where other overburden materials were sampled (e.g., till), similar sample collection protocols were followed.

At each sample location, a site description consisting of observations, as applicable, on a) genesis of material, stream flow and depth; b) surface expression; c) slope inclination and aspect; d) drainage; e) vegetation type and state; f) glacial features; g) anthropogenic factors; h) material description (consisting of i) texture, ii) structure, iii) bar form, iv) clast size, abundance, shape and type); and i) diagrams and additional comments, was completed. Photographs were taken at several sites.

Heavy Mineral Recovery and Identification

All samples were sent to Overburden Drilling Management (ODM) for heavy mineral processing to isolate KIMs, MMSIM® and gold grains. Initially, weighed samples were wet sieved at 2 mm. The >2 mm fraction was stored and the <2 mm fraction was passed over a shaking table to remove light (low specific gravity) material and to obtain a preliminary gold grain count. The table concentrate was panned and a secondary gold grain count performed. Heavy liquid separation (methylene iodide, specific gravity 3.2) was used to further concentrate heavy minerals. The heavy mineral concentrate then underwent ferromagnetic separation to obtain magnetic and nonmagnetic fractions. A series of various sieving and washing processes and additional magnetic separations were carried out to obtain the final concentrates for indicator mineral picking (Figure 6). The final heavy mineral concentrate (HMC) was sieved to obtain 4 size fractions (<0.25, 0.25–0.5, 0.5–1.0 and 1.0–2.0 mm; Appendix 7), each of which were weighed and placed in vials. Sample processing data are presented in Appendix 2. Indicator mineral picking was performed on the 0.25–0.5, 0.5–1.0 and 1.0–2.0 mm size fractions. The picking results and picking remarks for these minerals are outlined in Appendixes 3 and 4, respectively. The isolated KIM and MMSIM® grains were sent to the Ontario Geoscience Laboratories in Sudbury, Ontario to determine, through microprobe analysis, the precise composition of all picked grains. All of the microprobe analyses are summarized in Appendix 5.

During the picking process, 6 types of KIMs were isolated: Cr-pyrope and eclogitic garnets; Cr-poor megacrystic garnets; chromite; Cr-diopside; Mg-ilmenite and forsteritic olivine. All identified grains were sent for microprobe analysis.

A summary of recovered gold grains is listed in Appendix 6. Grains were classified by physical appearance into pristine, modified and reshaped categories (DiLabio 1990). Additionally, estimated gold concentrations in parts per billion (ppb) were calculated for each category and in total per sample.

Heavy mineral processing also recovered several types of MMSIM®. These include chalcopyrite, pyrite, molybdenite, goethite, spinel (gahnite), corundum, Mn-epidote, Cr-grossular, low Cr-diopside, red rutile, kyanite, staurolite, spessartine, uvarovite, sillimanite, orthopyroxene, fayalite, forsteritic olivine, and chromite. Results are summarized in Appendixes 8 and 9.

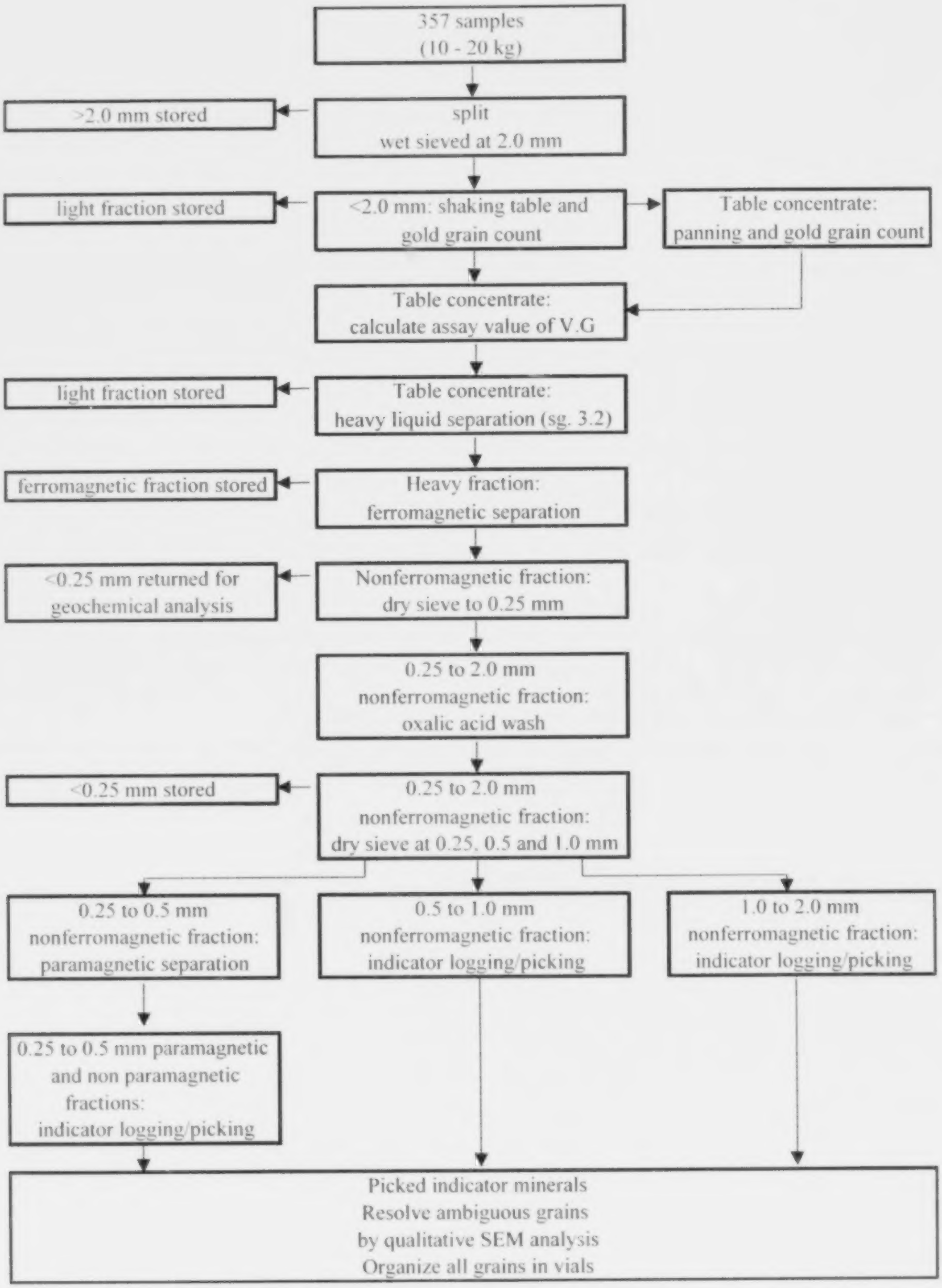
357 samples
(10 - 20 kg)
>2.0 mm stored
split
wet sieved at 2.0 mm
light fraction stored
<2.0 mm: shaking table and gold grain count
Table concentrate: panning and gold grain count
Table concentrate: calculate assay value of V.G
light fraction stored
Table concentrate: heavy liquid separation (sg. 3.2)
ferromagnetic fraction stored
Heavy fraction: ferromagnetic separation
<0.25 mm returned for geochemical analysis
Nonferromagnetic fraction: dry sieve to 0.25 mm
0.25 to 2.0 mm nonferromagnetic fraction: oxalic acid wash
<0.25 mm stored
0.25 to 2.0 mm nonferromagnetic fraction: dry sieve at 0.25, 0.5 and 1.0 mm
0.25 to 0.5 mm nonferromagnetic fraction: paramagnetic separation
0.5 to 1.0 mm nonferromagnetic fraction: indicator logging/picking
1.0 to 2.0 mm nonferromagnetic fraction: indicator logging/picking
0.25 to 0.5 mm paramagnetic and non paramagnetic fractions: indicator logging/picking
Picked indicator minerals
Resolve ambiguous grains
by qualitative SEM analysis
Organize all grains in vials

Figure 6. Heavy mineral concentrate process flow chart (*after* Averill 2001).

Pebble Lithology

Pebble lithology was determined by comparing the physical properties of pebbles to the local bedrock types. Pebble lithology studies provide a useful tool in determining whether the sediment in a stream is derived from a local or distal source. Pebbles similar to the bedrock types in the vicinity of the stream sample location indicate proximity to source. Exotic pebbles, those derived from bedrock located outside of the drainage basin sampled, indicate that transport has occurred over greater distances. In the fluvial (stream) environment, pebble shape may also reflect distance to source. An abundance of angular pebbles suggests local derivation, whereas a population of well-rounded pebbles may indicate longer transportation distances. However, the mineralogy of the pebble's rock type must be considered when using this approach as some easily weathered minerals may be quickly abraded in a stream environment. The resultant pebble may be rounded despite local derivation. Pebble lithologies identified in this survey include felsic and mafic plutonic, felsic and mafic metavolcanic and metasedimentary rocks. The pebble lithology classification from this survey is summarized in Appendix 10. A description of clasts recovered from the 2 to 5 mm size fraction, including size and estimated percentage abundance of rock type, is included in Appendix 2 (sample tabling data).

Estimation of Grain Numbers and Data Normalization

For samples that contain large numbers of indicator minerals, it is neither time efficient nor cost effective to precisely count the absolute number of grains or pick the total number of grains of an abundant mineral present in that sample. Therefore, a representative subset of the grains was picked and an estimate made of the number of grains present. After isolated grains were analyzed by microprobe and their compositions confirmed, picking estimates were normalized based on the number of grains verified to be kimberlitic. For example, sample MA-009 was estimated to contain 80 forsteritic olivine grains where 25 were picked and sent for microprobe analysis. Analysis revealed that 24 of the 25 forsterites were, in fact, fayalitic olivines. Therefore, after normalization, the sample was considered to contain 77 fayalitic olivine grains.

Normalization is not recommended except for unusual circumstances where abnormally high numbers of indicator minerals are present and only a select number of grains were picked from an estimated total number of grains (i.e., picked estimate normalization).

All normalized data and sample calculations are listed in Appendix 11.

Contamination in Samples

The study area has seen the historic production of a variety of industrial, precious and base metals from numerous mines and quarries. Mineral extraction operations in the area include industrial mineral operations, trap rock producers, and quarries producing cement, limestone, granite, marble, brick, nepheline syenite and sandstone. Production of copper, lead, zinc and iron also took place in the area. As well, there have been past producers of gold with most of the production taking place in the early 1900s.

Gold mines in the Deloro area were plentiful, many of which had tailings piles located on or near the Moira River. The former Deloro Smelting and Refining Company (Deloro Mine), initially established in 1906, produced stellite, arsenic, silver and cobalt. During the refining process for the production of cobalt and nickel oxides, ferric hydroxide (red mud) was produced as a by-product. Red mud was pumped to 2 main disposal sites; one on the west side of the Moira River, the other on the east side.

Considering the history of this developed area, it is not surprising then that heavy mineral or metal contamination was encountered in samples collected in the survey area (*see* Appendix 9 – MMSIM picking remarks). Contamination was present in all sample types collected and included the following: paint-coated epidote (roofing granules), smelter slag, synthetic corundum (sandblasting grit), lead and tin solder, brass, glass and milled rock. Contamination from both primary (chalcopyrite and arsenopyrite) and secondary base metal minerals (arsenolite, pharmacolite and zaratite), most likely from the Deloro Mine, was also extensive.

In Madoc, I.K.O. Industries Ltd. (I.K.O. Quarry) produces roofing granules to be used for the manufacturing of asphalt shingles. An on-site mill and colouring plant produces these granules that are transported by truck to the firm's asphalt shingle manufacturing plant in Brampton. Heavy mineral contamination identified by ODM within some of the modern alluvium samples, particularly those in proximity to roads, most probably originated from wind-blown material from this haul process. Aggregate used for this purpose is dark coloured, heavy and durable, making it an ideal shingle aggregate. These properties also contribute to this material's ability to persist in stream sediments and be dispersed downstream quite far from source.

An attempt was made in the collection of samples to avoid potential anthropogenic influences by sampling at least 30 m upstream from road or rail bridges; the normal point of entry for most contaminants. Due to the extent of stream sediment contamination in the survey area, especially in the Deloro and Madoc areas, anthropogenic input was difficult to avoid. Out of 250 samples collected, 97 had some form of contamination present. Locations of contaminated samples are highlighted on the sample location map (*see* Figure 2).

Results from contaminated samples have been included in all appendixes, however, these samples have been highlighted to make them distinguishable from non-contaminated samples. Data from these samples were not included in figures and discussion with the exception of the olivine and chromite sections.

Geochemical Analysis, Results and Interpretation

KIMBERLITE INDICATOR MINERALS

Despite the number of potential bedrock settings for natural diamond occurrences, kimberlite has historically been regarded as the only significant primary host rock for diamonds (Helmstaedt 1993). The volcanic host rocks for diamonds, however, merely represent the agents to transport diamonds from the upper mantle to the surface. Kimberlite magmas must form at extreme depths (in excess of 150 km) in order to tap the diamondiferous portions of the sub-cratonic lithosphere. The proven diamond source rocks are various types of peridotite and certain high-pressure eclogites. Three types of peridotitic paragenesis are evident and are listed in order of relative importance with respect to diamond potential: garnet harzburgite, chromite harzburgite, and garnet lherzolite (Gurney 1984). The transportation and subsequent disaggregation of these source rocks by kimberlite during the eruption process is the mechanism by which both diamonds and associated indicator minerals become liberated from their mantle host rocks.

The indicator mineral approach to kimberlite exploration relies on the recognition of distinctive mineral suites that are associated with potentially diamondiferous source rocks. Since these minerals are far more abundant than coexisting diamonds in the mantle environment and since kimberlite weathers quickly in the secondary environment, exploration programs focus on the recovery of indicator minerals rather than diamonds. The compositions of certain key indicator minerals, namely garnet, chromite, chromian diopside, olivine and ilmenite, have been used in diamond exploration to permit an assessment of diamond potential (Fipke, Gurney and Moore 1995).

Garnet

A total of 35 garnets were recovered from heavy mineral processing and sent for microprobe analysis which determined the following distinctions: 3 G9 pyropes (lherzolitic origin); 21 almandine and spessartine; 8 grossular; 2 uvarovite candidates and 1 andradite candidate.

Periodotitic garnets (Cr_2O_3 >2) can be subdivided into G9 and G10 classifications based on CaO concentration. On a CaO versus Cr_2O_3 plot, 85% of diamond inclusion garnets fall on the calcium-enriched side of a diagonal line that parallels the lherzolite trend. This 'diamond in' line (based on studies of South African diamondiferous kimberlites) separates G10 (Ca-depleted) garnets to the left and G9 garnets to the right. Given that garnet harzburgite has greater diamond potential than garnet lherzolite, G10 garnets with compositions that scatter well across the sub-calcic field are the most important garnet indicators recovered in an exploration program (Gurney and Zweistra 1995). Figure 7 shows the distribution of all compositional data on the lherzolite–harzburgite discriminant plot.

The composition of the 3 Cr-pyrope grains (MA-077, MA-143 and SG-009) implies a lherzolitic source. Grains from samples MA-077 and SG-009 had well-chiselled edges, indicating long transport from a distal source. These garnets can be considered as kimberlite indicator minerals, but likely represent the background KIM signature for the region.

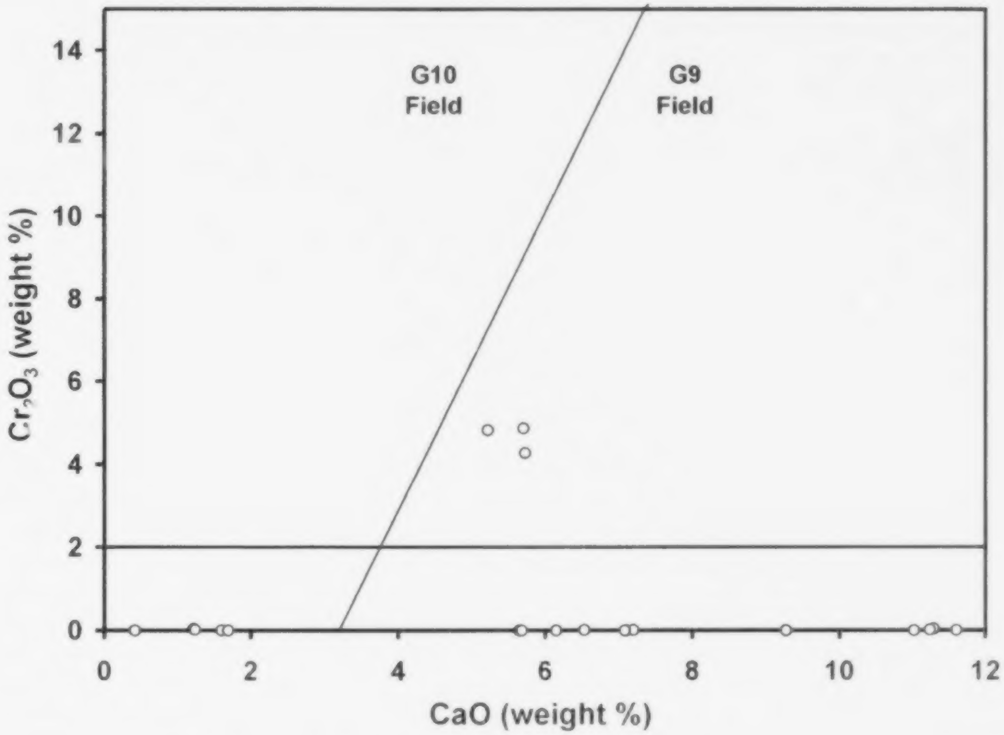

Figure 7. CaO versus Cr_2O_3 plot of G9 garnets recovered from the study area (*after* Dawson and Stephens 1975).

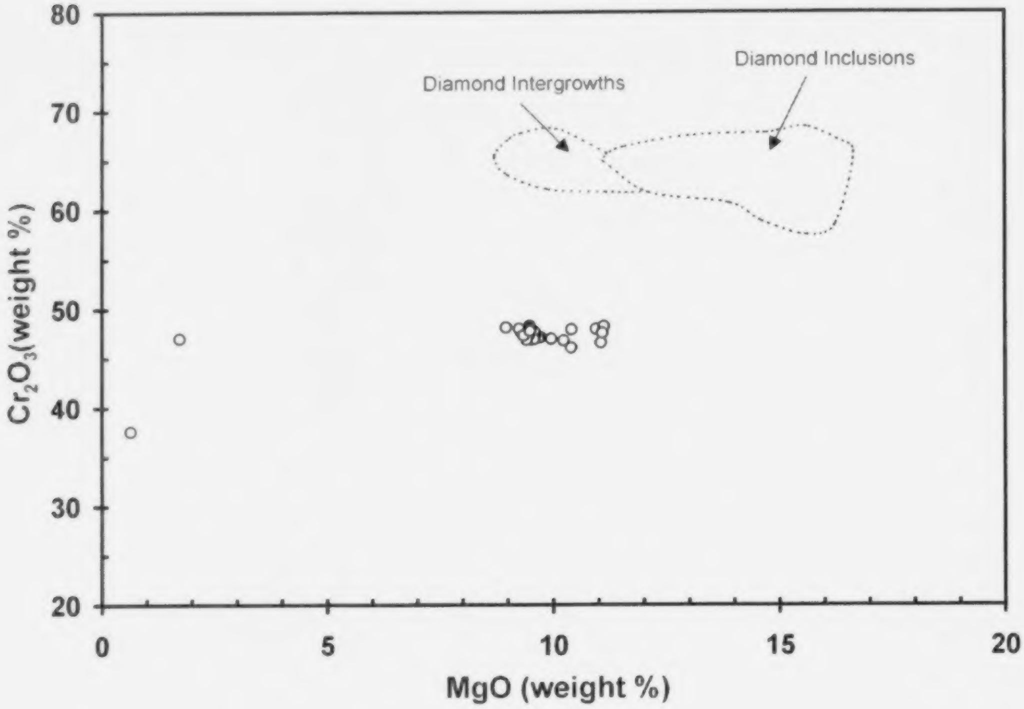

Figure 8. MgO versus Cr_2O_3 plot of all chromite grains recovered from the study area (*after* Fipke, Gurney and Moore 1995).

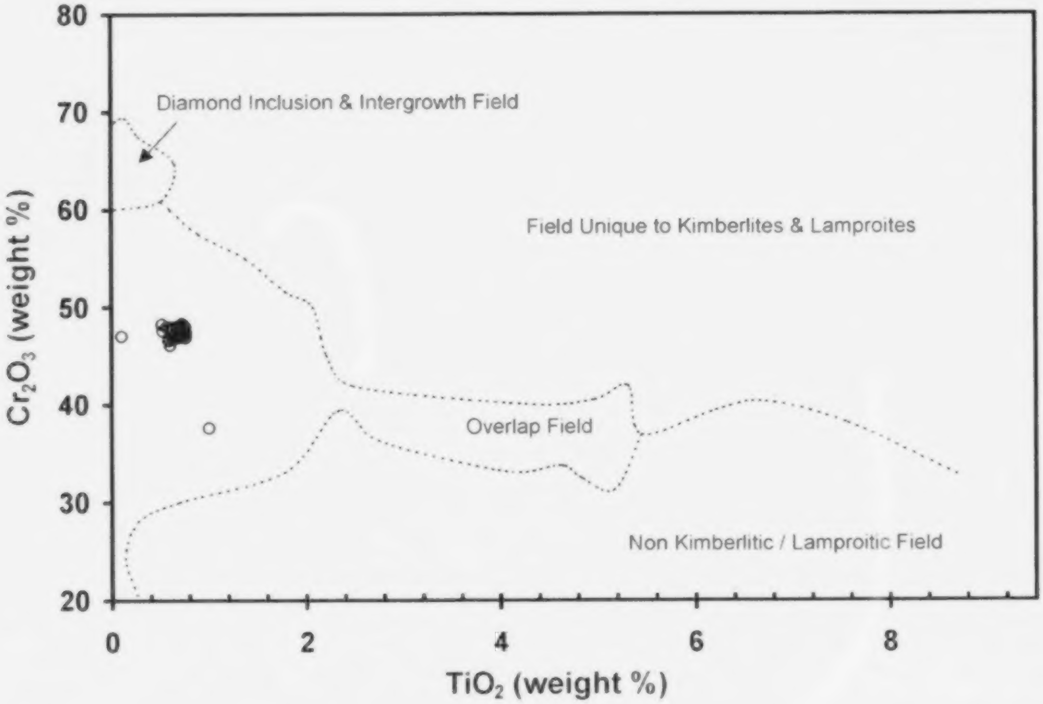

Figure 9. TiO_2 versus Cr_2O_3 plot of all chromite grains recovered from the study area (*after* Fipke, Gurney and Moore 1995).

Chromite

Kimberlitic chromite grains allow the determination of the amount of chromite harzburgite sampled and disaggregated by the kimberlite (Fipke, Gurney and Moore 1995). The chromium content of macrocryst chromites is the most critical indicator of diamond potential and is pressure dependent (Daniels 1991). Evidence summarized by Griffin et al. (1994) suggests that Cr_2O_3 increases with temperature and pressure in chromite. Thus, chromite with high Cr_2O_3 is most likely to have originated at depth and can be interpreted to be of kimberlitic origin.

Chromites associated with diamonds have a high chromium content (>60 weight % Cr_2O_3), moderate to high levels of magnesium (~12 to 16 weight % MgO) and low levels of titanium, usually less than 0.3 weight % TiO_2 (Fipke, Gurney and Moore 1995). Chromite grains from this survey were plotted on Fipke, Gurney and Moore's (1995) MgO versus Cr_2O_3 discriminant diagram (Figure 8). None of the grains plotted in the diamond inclusion or diamond intergrowth fields, as Cr_2O_3 values were too low, ranging from 20 to 48 weight %.

The TiO_2 versus Cr_2O_3 weight % discriminant plot (Figure 9) is also useful in kimberlite exploration and can be used to isolate kimberlitic and lamproitic chromites from other sources (Fipke, Gurney and Moore 1995). Chromite grains plotting in the overlap field of the TiO_2 versus Cr_2O_3 diagram are from unknown sources, but may be kimberlitic.

A total of 34 grains underwent microprobe analysis and have been geochemically classified as being of possible kimberlitic affinity, plotting into the overlap field of the TiO_2 versus Cr_2O_3 diagram. One chromite grain was recovered from each of samples MA-031, MA-101 and MA-148. Sample MA-114, collected in Barrie Township, contained 31 possibly kimberlitic chromite grains (92 grains estimated, *see* Appendix H). All chromite grains came from samples containing contamination. Regardless of this, the chromite section was included in this report to ascertain their possible origin(s). The results illustrate that none of the grains can be considered of explicit kimberlitic origin. Mineral chemistry for all chromite grains is listed in Appendix E.

Chromian Diopside

Chromian diopside (Cr-diopside (Morimoto 1989)) on its own is not a particularly good kimberlite indicator mineral since it occurs in both kimberlite and other ultramafic rocks. Because of the large populations encountered in the secondary environment it is necessary to try to differentiate Cr-diopsides derived from kimberlitic sources as opposed to crustal sources.

Previous studies have used Cr_2O_3 content to accomplish this, however, there is some dispute as to the cut off value of Cr_2O_3 used to define kimberlitic Cr-diopsides. Thorliefson and Garrett (1993) define Cr-diopsides with Cr_2O_3 >0.5 weight % as kimberlitic and Stephens and Dawson (1977) use a cut off value of 1.45 weight % Cr_2O_3. McClenaghan et al. (1999) also suggests that Cr_2O_3 values of Cr-diopside associated with lherzolitic rock are commonly >1.5% weight %. Chromian diopsides from kimberlite in the Kirkland Lake area, however, had Cr_2O_3 compositions as low as 0.3 weight % (Sage 1996).

More recently, Morris, Sage and Ayer (1999) developed a ternary plot of atomic Cr–Al–Na, which has proven to be an excellent way of discriminating between Cr-diopsides derived from kimberlite and other bedrock types (Figure 10). For kimberlitic Cr-diopsides, the Cr values range from 1 to 40 molar weight % and Al_2O_3 values range from 2 to 50 molar weight %. Na_2O ranges are related to Cr content. For example, when 1 molar weight % < Cr_2O_3 < 20 molar weight %, Na values are 29 to 48 molar weight % and when Cr_2O_3 > 20 molar weight %, the range increases from 19 to 58 molar weight %, but does not exceed 65 molar weight% (Allen 2001).

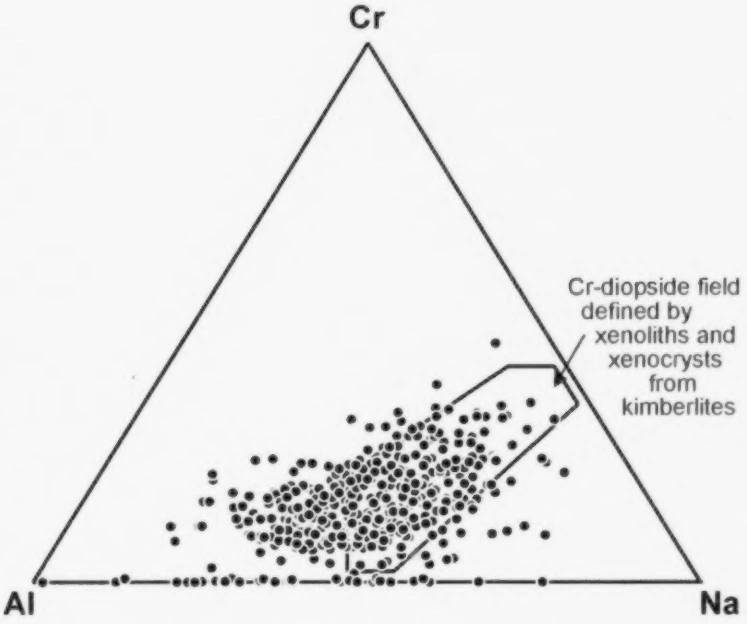

Figure 10. Ternary plot of atomic Cr–Al–Na showing all Cr-diopside grains from the survey area (*after* Morris, Sage and Ayer 1999).

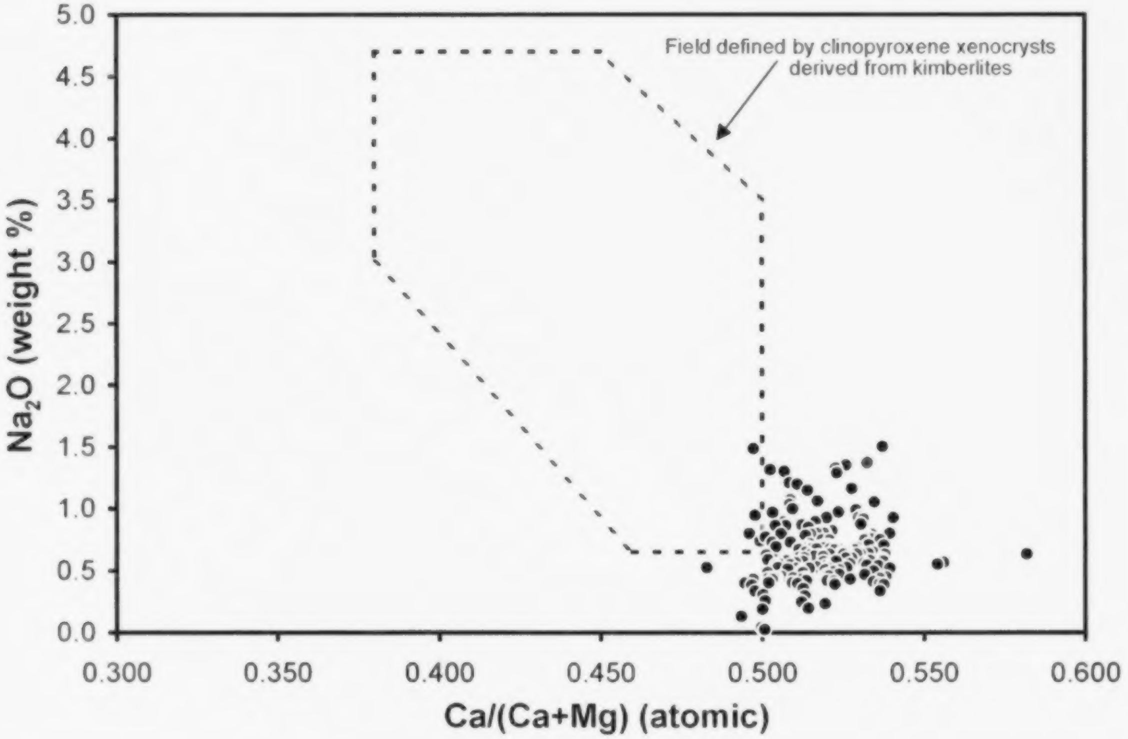

Figure 11. Ca/(Ca+Mg) versus Na_2O classification scheme for clinopyroxene from the study area that plot within the field defined by mantle xenoliths and xenocrysts on the Al–Na–Cr ternary diagram (*see* Figure 10).

However, compositional overlap with non-kimberlitic Cr-diopsides requires that these data also be classified using a binary plot of atomic Ca/(Ca+Mg) versus Na_2O weight % (Crabtree and Gleeson 2003) (Figure 11). The choice of Na_2O as a variable on this diagram is important since there is a correlation between pressure and the amount of Na that can enter the clinopyroxene structure in the form of the jadeite molecule ($NaAlSi_2O_6$)(Ontario Geological Survey 2001). This binary plot is based on Cr-diopside from both peridotite xenoliths carried in kimberlites (globally occurring) and xenocrysts from the Attawapiskat kimberlite field. Analyses that fall into both the kimberlitic fields of the ternary and binary plots can be considered as KIMs.

Four hundred and seventeen Cr-diopside grains were identified in this survey: 184 with Cr_2O_3 between 1.5 and 0.5 weight %, and 233 low chromian diopsides (Cr_2O_3 <0.5 weight %). When grains that plot in the compositional field for mantle-derived Cr-diopside are recast onto the Ca/(Ca+Mg) versus Na_2O weight % binary plot, only 4 grains have compositional characteristics that may suggest they were mantle-derived. However, because the 4 grains fall into the extreme lower right corner of the kimberlite field on this plot, they are not good high-pressure candidates and are more likely of crustal provenance (D.C. Crabtree, Ontario Geoscience Laboratories, personal communication, 2006).

Three of these grains are from samples located in the southeast portion of the survey area (SG-013, SG-015 and MA-119). One grain was recovered from sample MA-066, located in southeast Wollaston Township.

Ilmenite

Another common mineral in Ontario kimberlites (Sage 1996), which is resistant to secondary weathering and is important in the assessment of the diamond potential of source rocks, is ilmenite. Kimberlitic ilmenite is typically magnesium rich (4 to 16 weight %) and chromium rich (0.1 to 11 weight %) (Mitchell 1986) and can be readily distinguished from Mg- and Cr-depleted ilmenite that is representative of crustal rocks. Ilmenite compositions are plotted on a MgO versus Cr_2O_3 parabolic plot in order to screen out compositions that are from crustal sources (MgO < 4 weight %) (Figure 12).

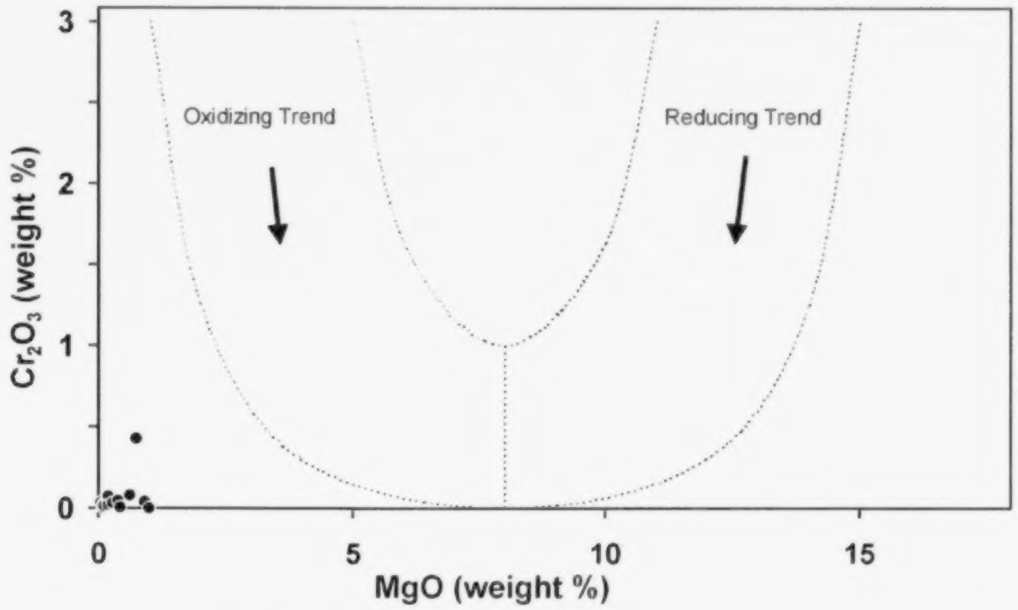

Figure 12. MgO versus Cr_2O_3 plot of kimberlite ilmenites (>4 weight % MgO) from the survey area (*after* Gurney and Moore 1991).

As the incorporation of the Fe_2O_3 molecule into the ilmenite structure is dependent on the oxygen fugacity (fO_2) in the kimberlitic magma (Hagerty and Tompkins 1983), ilmenite compositions may be used to predict whether magmatic conditions would have been favourable (reducing) or detrimental (oxidizing) for diamond preservation during kimberlite emplacement (Ontario Geological Survey 2001). Highly oxidizing conditions are known to promote diamond resorption and can remove up to 50% of the original diamond content (Gurney and Zweistra 1995). Ilmenites are abundant as macrocrysts in both kimberlite and its groundmass. Therefore, ilmenites are considered to be representative of both the depth and redox conditions of the magma chamber sampled and of subsequent changes that may have affected the kimberlite upon ascent and emplacement (Gurney and Zweistra 1995).

On a MgO versus Cr_2O_3 parabolic plot, ilmenites with MgO >8 weight % at increased concentrations of Cr_2O_3 indicate high preservation potential (reduced environment). In contrast, ilmenites with MgO <8 weight % with little or no concentration of Cr_2O_3 indicate less preservation potential (oxidized environment)(Fipke, Gurney and Moore 1995). The mantle source material had to be diamondiferous initially for the presence of diamond preservation ilmenites to be of any significance.

A total of 13 ilmenites were recovered from heavy mineral processing and sent for microprobe analysis, of which none are classified as KIMs based on the criteria discussed above. Magnesium content of these grains was very low (MgO <1% weight %) indicating likely derivation from local gabbro and anorthosite rocks.

Olivine

Olivine is a useful indicator mineral in that macrocrysts are a reflection of the amount of mantle material sampled and, thus, reflect the success of the kimberlite magma in bringing mantle components to the surface of the earth (Gurney and Zweistra 1995). However, because olivine is a common component in kimberlite as well as a range of ultramafic supracrustal and plutonic rocks (Stone 2001), identification of each of these types of olivine is critical.

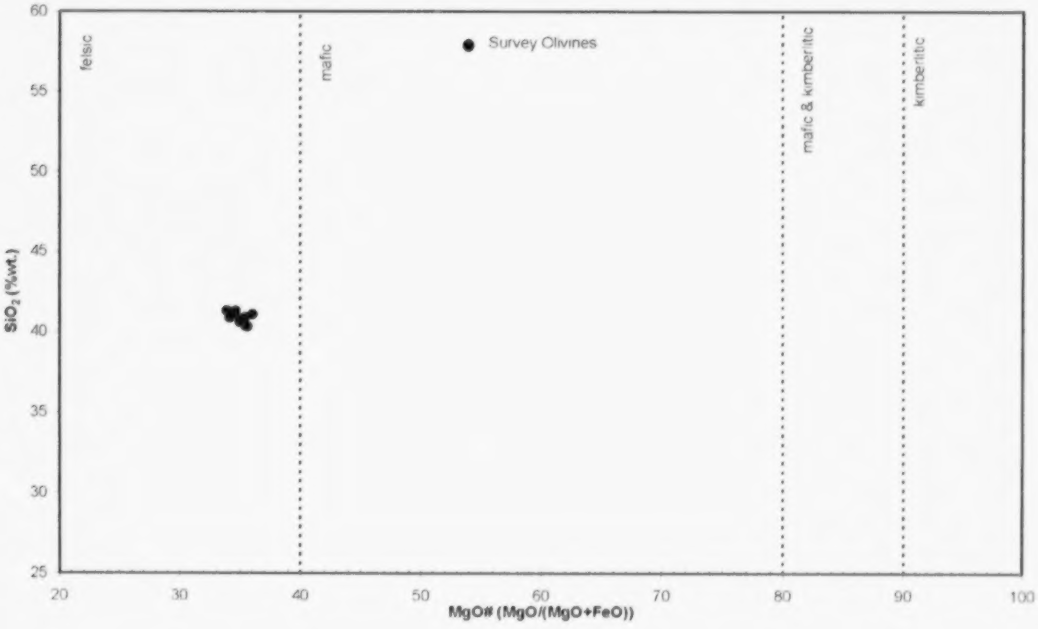

Figure 13. MgO number (MgO#) versus SiO_2 plot showing composition of olivines recovered from the survey area.

According to Morris et al. (2000), forsteritic olivines with Fo values (MgO/(MgO+FeO)) greater than 90 are considered to be associated exclusively with kimberlite and those with Fo values between 80 and 90 are considered to be derived from mafic or kimberlitic sources.

A total of 24 olivine grains, from 1 sample (MA-009), underwent microprobe analysis. Of these 24 grains, all have MgO numbers less than 40 indicating that they are non-kimberlitic (Figure 13). These fayalitic olivines may be related to the nearby Gawley Creek syenite, a late alkalic intrusion.

SUMMARY OF KIMBERLITE INDICATOR MINERALS AND RECOMMENDATIONS FOR EXPLORATION

Results of this regional alluvium and till survey indicate a lack of unequivocal kimberlite indicator minerals. Proportional dot maps are not warranted for individual KIM types because of their low numbers and, therefore, have not been included. Because of the absence of favourable KIMs, no areas can be recommended for further follow up.

Although only samples free of contamination were included in both the figures and discussion of individual KIMs (with the exception of the olivines and chromites), samples with contaminants were also geochemically assessed in the same manner as those that were contaminant-free, and results of these also did not identify any areas as being favourable for further KIM exploration.

METAMORPHIC/MAGMATIC MASSIVE SULPHIDE INDICATOR MINERALS

Metamorphic/magmatic massive sulphide indicator minerals (MMSIM®) are stable heavy minerals that occur in alteration zones associated with volcanogenic massive sulphide (VMS) deposits in high-grade terranes; in magmatic Ni-Cu sulphide deposits; and in skarn and greisen deposits (Averill 1999). The heavy mineral assemblages associated with each of these deposits are listed in Table 2. Identifying MMSIM® in overburden deposits is useful as they are coarse-grained; unique to the types of mineralization listed above; visually distinctive; easy to concentrate due to their specific gravity (>3.2); amenable to paramagnetic separation; and they are relatively resistant to weathering in the secondary environment (Averill 1999). Like KIMs, MMSIM® can be traced up-stream and/or up-ice to the bedrock source from which they were derived. MMSIM® picking results are listed in Appendix 8.

Common mineral associations in VMS-type dispersion trains are gahnite-barite, chalcopyrite-spessartine (Mn epidote), gahnite-chalcopyrite-staurolite (or anthophyllite) and red rutile-spinel-kyanite (or sillimanite). Gahnite is probably the most important MMSIM® associated with VMS type dispersions since it is enriched in the ore metal Zn and is extremely stable in the secondary environment. Other MMSIM® associated with VMS deposits include kyanite, sillimanite, staurolite and orthopyroxene.

Magmatic Ni-Cu indicator minerals are characterised by distinctive chromium-rich phases, such as Cr-diopside, chromite, uvarovite and Cr-rutile (Ontario Geological Survey 2001). Averill (1999) suggests that these phases are produced as a result of the separation of Ni-Cu-Fe-S liquids from ultramafic magmas, which results in the subsequent enrichment of Mg, Fe, Cr, Al and Si in the residual melt. Other phases associated with these deposits include chalcopyrite, forsteritic olivine, Mg-orthopyroxene and PGE alloys (Ontario Geological Survey 2001).

Table 2. Indicator minerals commonly associated with base metal mineralization (*after* Averill 1999). Shaded areas indicate an association between mineral and type of deposit.

Indicator Mineral	**M VMS**	**Mag Ni-Cu**	**Skarn**	**Griesen**	**Other Occurrence**
Chalcopyrite	▨	▨	▨	▨	
Chromite		▨			Mafic igneous
Corundum	▨				High-grade metamorphic
Cr-rutile	▨	▨			
Forsteritic olivine			▨		
Gahnite	▨				
Grossular			▨		
Kyanite	▨				High-grade metamorphic
low Cr-diopside		▨			Mafic igneous
Molybdenite	▨	▨	▨	▨	
Mn-epidote	▨				
native gold	▨		▨		
Olivine		▨			Mafic igneous
Orthopyroxene	▨	▨			High-grade metamorphic
Pyrite	▨	▨	▨	▨	
Sillimanite	▨				High-grade metamorphic
Spessartine	▨				Metavolcanic
Staurolite	▨				High-grade metamorphic
Uvarovite		▨			
Anthophyllite	▨				High-grade metamorphic
Mg-spinel	▨				High-grade metamorphic
Sapphirine	▨				High-grade metamorphic
Dumortierite	▨				High-grade metamorphic
Franklinite	▨				
Willemite	▨				
Barite	▨				
Cinnabar	▨				
Loellingite	▨				
Tourmaline	▨			▨	
Hercynite		▨			
Rammelsbergite		▨			
Sperrylite		▨			
Vesuvianite			▨		
Johannsenite			▨		
Scheelite			▨		
Topaz				▨	
Fluorite				▨	
Cassiterite				▨	
Wolframite				▨	

Many of these phases occur as common components in non-mineralized rocks presenting a challenge in dealing with this complex group of minerals (Crabtree 2003). Averill (1999) suggests that olivine, orthopyroxene, chromite and Cr-diopside occurrences in alluvial samples should only be emphasized if other more diagnostic minerals are present. Crabtree (2003) notes that sulphides are not particularly stable in the secondary environment, however, chalcopyrite and sphalerite are nominally stable in postglacial terrains. It seems logical, therefore, to evaluate these occurrences together with more stable ore-enriched phases, such as gahnites, whenever they occur.

Most of the areas studied by Averill (1999) and Crabtree (2003) are characterized by lower metamorphic grades (greenschist to lower amphibolite facies), compositionally limited intrusive suites, and the absence of carbonate metasedimentary rocks. Consequently, the geology of the Grenville Province in the study area may exhibit some unique behaviour. Some of this uniqueness is discussed in the subsequent sections.

CHROMIAN DIOPSIDE

Averill (1999) has suggested that low Cr-diopsides are an important indicator mineral for magmatic Ni-Cu mineralization. Clinopyroxene is one of the first minerals to crystallize from a mafic to ultramafic melt. If its formation precedes chromite, chromium in the melt may initially be incorporated into the diopside structure. However, clinopyroxene crystallization occurring after chromite can still produce Cr-diopside. The silicate melt will eventually be depleted in iron due to the formation of Ni-Cu minerals and chromite crystallization will cease, allowing any excess chromium to be included in diopside. Only those Cr-diopsides plotting outside the kimberlite field defined on a Cr_2O_3–Al_2O_3–Na_2O ternary diagram were considered as potential MMSIM® as shown on Figure 10. These grains were further subdivided based on their Cr_2O_3 weight % values (Appendix 5). Cr-diopsides with less than 1.3 weight % Cr_2O_3 were considered to be MMSIM® (Morris et al. 2000).

Anomalous values (greater than the 95 percentile) of low Cr-diopsides were recovered from TM-023 (16 grains), MA-141 (13 grains) and MA-143 (15 grains). Sample TM-023 is located near a series of ultramafic pods found along the boundary between Grimsthorpe and Mazinaw domain (Ford and Skippen 1997). Samples MA-141 and MA-143 are located in Cashel Township, in the north-central portion of the survey. These 2 samples occur along the tectonic boundary between northern Belmont domain and Grimsthorpe domain, but these samples cannot be directly linked to any known mafic or ultramafic bodies.

BARITE

One of the main base metal indicators recovered from till and alluvium samples was barite. Several samples from the southern portion of the survey area produced very high barite counts. Samples with the highest barite grain counts include TM-030 (6000 grains), TM-040 (200 grains) and MA-100 (800 grains), however, these samples lack other important complementary indicators such as sphalerite and gahnite.

Barite in the survey area occurs as veins often associated with fluorite and calcite, as in Huntingdon and Madoc townships, or as a gangue mineral with calcite, in veins containing galena as found in Tudor and Lake townships (Guillet 1963). Although many of these veins are concentrated in the southern part of the study area near the Precambrian–Paleozoic unconformity, calcite-barite veins can be found throughout the study area, especially along the trace of east- and northwest-trending faults related to the Ottawa–Bonnechere graben.

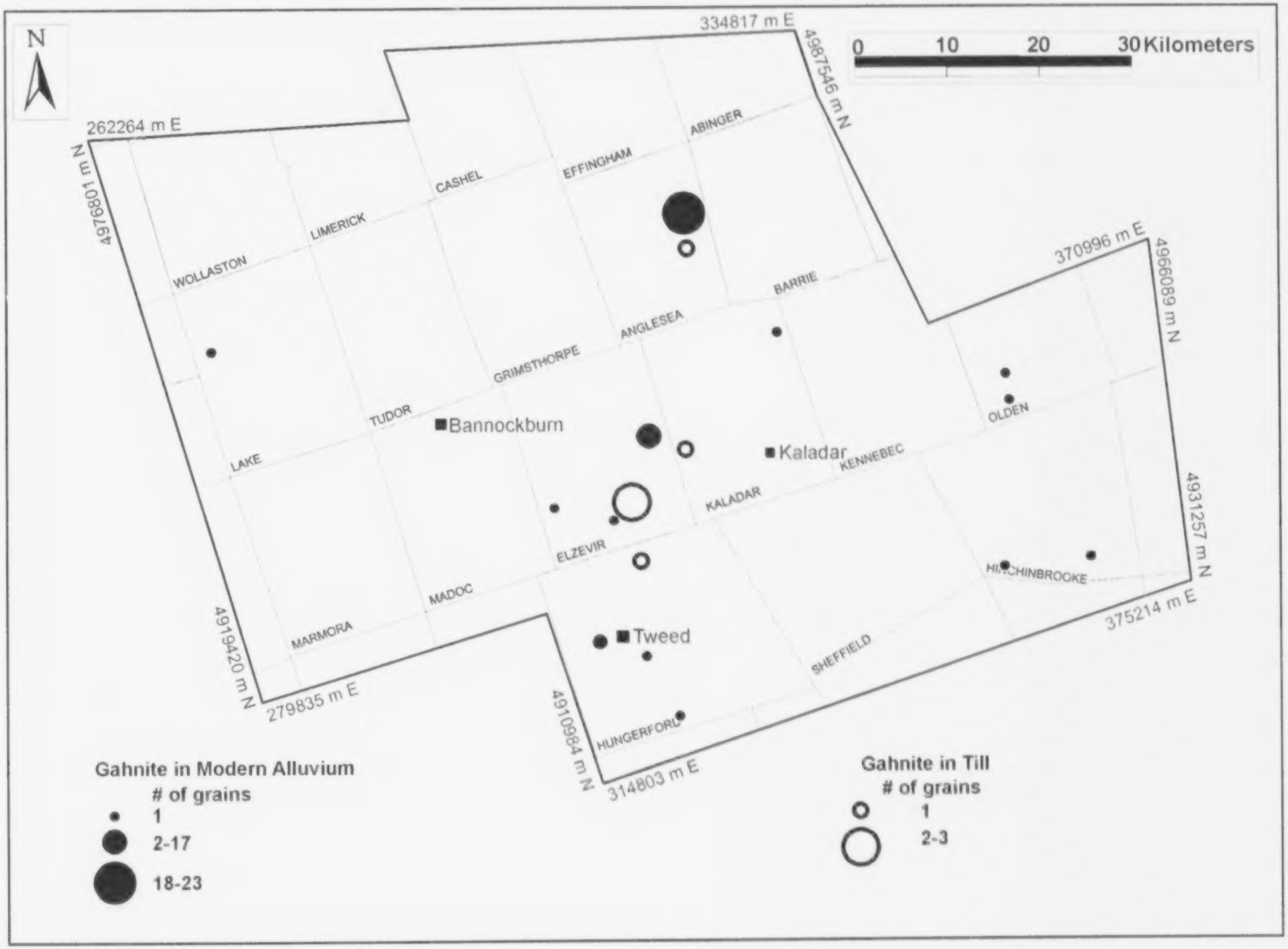
N
0
10
20
30 Kilometers
334817 m E
4987546 m N
262264 m E
4976801 m N
370996 m E
4966089 m N
4931257 m N
375214 m E
4919420 m N
279835 m E
4910984 m N
314803 m E
ABINGER
EFFINGHAM
CASHEL
LIMERICK
WOLLASTON
BARRIE
ANGLESEA
GRIMSTHORPE
TUDOR
LAKE
Bannockburn
Kaladar
KENNEBEC
OLDEN
KALADAR
ELZEVIR
MADOC
MARMORA
Tweed
HINCHINBROOKE
SHEFFIELD
HUNGERFORD
Gahnite in Modern Alluvium
# of grains
1
2-17
18-23
Gahnite in Till
# of grains
1
2-3

Figure 14. Regional distribution of gahnite grains in till and modern alluvium.

GAHNITE

Gahnite is a useful MMSIM® as it serves as an indicator for zinc mineralization and is stable in oxidizing surficial environments (Morris et al. 1997). There are 3 modes of occurrence for gahnite which include VMS (polymetallic), rare earth elements (REE) pegmatites and peraluminous granites (Ontario Geological Survey 2001). Using electron microprobe data, compositional differences between gahnites from various environments makes it possible to discern the mode of occurrence. Gahnites from VMS deposits typically have MgO concentrations >2 weight %, whereas those from REE pegmatites and peraluminous granites tend to have MgO concentrations that are <2 weight % (Morris et al. 1997). Mineral chemistry for all gahnite grains is listed in Appendix 5.

A total of 54 gahnite grains were recovered from modern alluvium samples and 6 from till samples. Samples MA-077 and MA-150 yielded anomalous levels of gahnite grains (17 and 23 grains, respectively). More than half of the grains from these 2 samples had MgO concentrations >2 weight % suggesting a VMS-type deposit as a possible source. It is important to note, however, that these samples did not yield any chalcopyrite and only background concentrations of pyrite.

Sample MA-150 is located in westernmost Mazinaw domain, at the western end of a volcanic belt known to contain FIII rhyolites and sulphide mineralization (Easton and Ayer 1994). In Archean greenstone belts, FIII rhyolites are associated with volcanogenic massive sulphide mineralization. The abundance of gahnite grains in this sample, in association with favourable host rocks, makes this volcanic belt a prime exploration target.

Sample MA-077 is located in Grimsthorpe domain, in an area underlain by mafic metavolcanic rocks, near the contact with the Elzevir intrusion.

Figure 14 indicates the regional distribution of gahnite in modern alluvium and till samples. The till samples that contained gahnite grains are located along a roughly linear trend and show a general spatial relationship with the gahnite in modern alluvium. This linear trend, roughly north to south, is approximately that of the last direction of ice movement over this area. This trend also corresponds to the position of the deformation zone that marks the boundary between Grimsthorpe and Mazinaw domain. This tectonic boundary probably influenced the direction of ice movement.

GOLD

Gold grains recovered from overburden samples are commonly silt sized and vary in grain shape depending on the distance of transport from their source. The gold grain shape classification is based on DiLabio (1990) and uses the terms pristine, modified and reshaped. In general, pristine grains appear as angular wires or rods and, thus, retain primary textures, such as crystal faces, suggesting little distance of transport from the source. Modified grains retain the original shape, but have irregular edges and crumpled or curled protrusions. Reshaped grains indicate a longer distance of transport from source and, therefore, appear flattened or rounded, retaining little or none of their original form (DiLabio 1990).

Recoveries of gold grains from this survey are quite modest, with the highest count being 9 grains (MA-054). A total of 71 gold grains were recovered, of which, 35 were reshaped, 15 were modified and 21 were pristine (Figure 15). The majority of grains were reshaped, suggesting some distance of transport. Gold grain data are listed in Appendix 6.

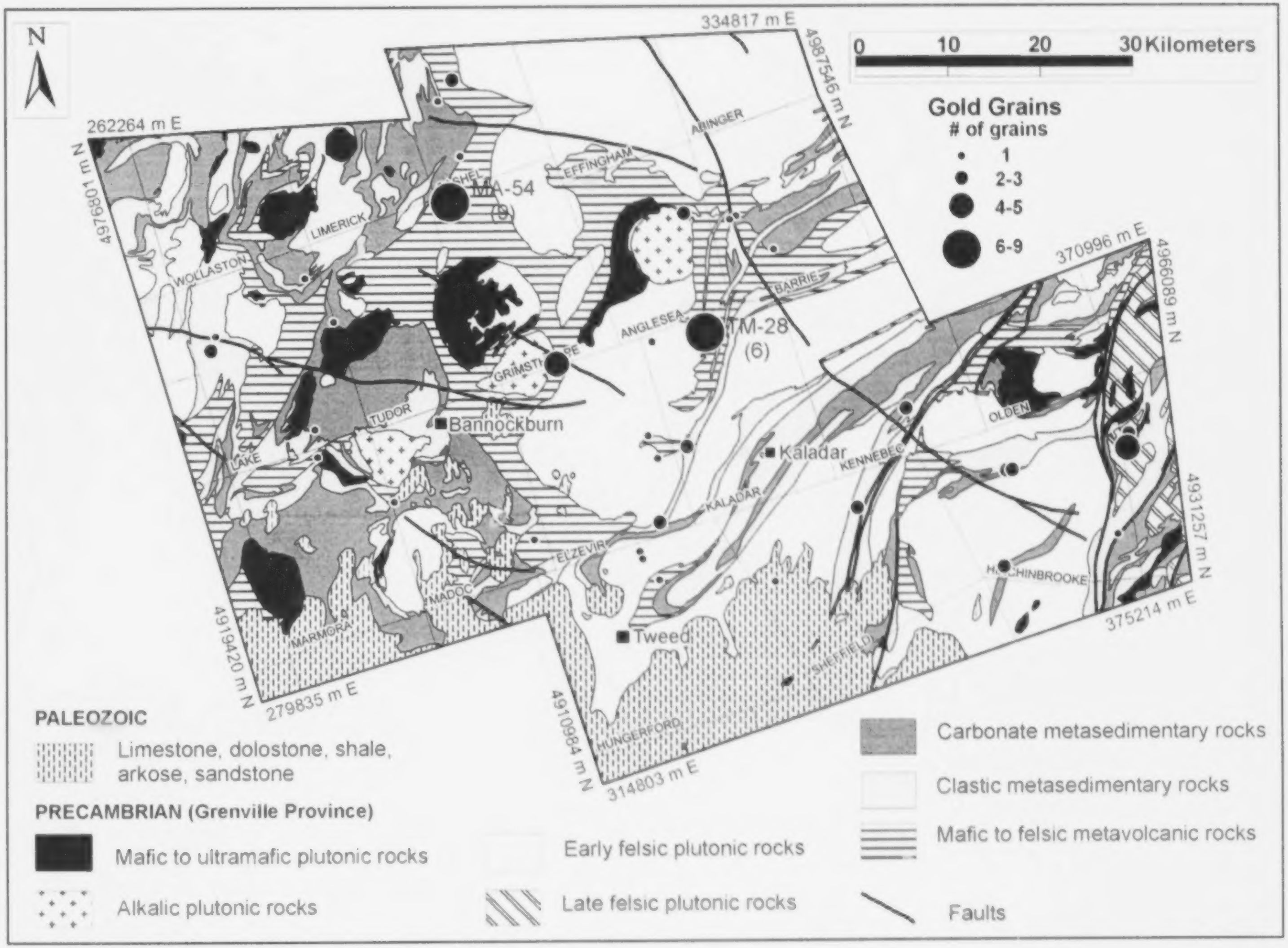
N
0
10
20
30 Kilometers
Gold Grains
# of grains
1
2-3
4-5
6-9
262264 m E
4976801 m N
334817 m E
4987546 m N
370996 m E
4966089 m N
4931257 m N
375214 m E
314803 m E
4910984 m N
279835 m E
4919420 m N
MA-54
(9)
TM-28
(6)
Bannockburn
Kaladar
Tweed
WOLLASTON
LIMERICK
CASHEL
EFFINGHAM
ABINGER
BARRIE
ANGLESEA
GRIMSTHORPE
TUDOR
LAKE
MARMORA
MADOC
ELZEVIR
KALADAR
KENNEBEC
OLDEN
HINCHINBROOKE
SHEFFIELD
HUNGERFORD
PALEOZOIC
Limestone, dolostone, shale, arkose, sandstone
PRECAMBRIAN (Grenville Province)
Mafic to ultramafic plutonic rocks
Alkalic plutonic rocks
Early felsic plutonic rocks
Late felsic plutonic rocks
Carbonate metasedimentary rocks
Clastic metasedimentary rocks
Mafic to felsic metavolcanic rocks
Faults

Figure 15. Regional distribution of gold grains. Anomalous sites are labelled by sample number with the corresponding number of grains shown in brackets.

Of interest is the fact that 6 of the 9 gold grains recovered from site MA-054 were pristine, suggesting a short distance of transport. This site is located along the Moira River in northwestern Grimsthorpe Township, downstream from the past-producing Gilmour gold mine. This sample also lies at the eastern end of the Gilmour shear zone, which contains several gold occurrences (Easton 2004 and references therein). Nearby sample TM-059 also contains 2 pristine gold grains.

Till sample TM-028 also yielded pristine gold grains. A total of 6 gold grains were recovered from this sample and all were classified as pristine. This site is located in Kaladar Township in the vicinity of the Addington gold mine. Reshaped gold grains in sample TM-056 may be derived from the nearby Ore Chimney gold mine.

Gold-bearing quartz and/or carbonate veins occur throughout the lower metamorphic grade parts of the Central Metasedimentary Belt. Gold deposits in this belt occur within, or are spatially associated with deformation zones (Easton and Fyon 1992; Easton and Kamo 2005). Arsenopyrite is a common accessory mineral in the Central Metasedimentary Belt gold occurrences (Easton and Fyon 1992), yet this association is not observed in the modern alluvium samples. This is likely due to the fact that arsenopyrite breaks down more readily than other sulphide minerals such as pyrite.

MOLYBDENITE

Most molybdenite occurrences and past-producers within the Grenville Province are found outside of the study area. Nonetheless, a total of 12 samples containing at least one grain of molybdenite were reported by the study. Seven samples (MA-099, MA-100, MA-101, MA-103, MA-107, MA-123, MA-125) occur in the area underlain by rocks of either Sharbot Lake domain or Frontenac terrane (MA-101, MA-103). Five samples, including the two with the highest number of grains (MA-100 (3) and MA-125 (9)) occur in association with a marble-syenite belt in the Puzzle Lake area that has previously been identified with having potential for both zinc and molybdenum (Easton 2001d).

METAMORPHIC MINERALS

Chondrodite

Chondrodite is a yellowish-coloured, magnesium silicate mineral commonly found in amphibolite-facies marbles in the Central Metasedimentary Belt. Not surprisingly, it is found in trace amounts in many of the samples collected during the survey. Modern alluvium samples containing trace amounts of chondrodite occur mainly in the northwestern and eastern parts of the map area, in areas underlain by the higher metamorphic grade rocks of northern Belmont domain, Mazinaw domain, and Frontenac terrane.

Grossular Garnet

Three samples contained grossular garnet, all in association with areas underlain by high-grade metamorphic rocks. Two of these samples (MA-081, TM-055) occur in association with Flinton Group carbonate rocks; the other sample (MA-113) occurs with high-grade marbles in Frontenac terrane. Consequently, it can be determined if these garnets reflect regional metamorphism of the marbles, or are potentially related to skarn mineralization.

Kyanite, Sillimanite, Staurolite

In Archean greenstone belts, the presence of these 3 minerals is generally interpreted to be the result of hydrothermal alteration related to volcanogenic massive sulphide mineralization. This is in contrast to the study area, where almost all samples containing more than trace amounts of any of these 3 minerals can be attributed to derivation from nearby metamorphic rocks.

The majority of the samples containing more than 0.5 to 4% kyanite, sillimanite and/or staurolite are associated with the area underlain by rocks of Mazinaw domain, or are located just downstream from rocks of Mazinaw domain (samples MA-078; TM-024, -047, -048, -050, -051, -054, -058; SG-002, -006). Most of these samples are uncontaminated, and kyanite is the dominant mineral phase present, followed by sillimanite and/or staurolite. Mazinaw domain contains a package of pelitic metasedimentary rocks, known as the Flinton Group, that have been metamorphosed to amphibolite facies, producing a variety of metamorphic mineral assemblages, some of which contain kyanite, sillimanite and/or staurolite. Thus, this association of samples with Mazinaw domain is not unexpected.

Samples MA-134 and MA-136 come from the vicinity of Whetstone Lake, another area where high-grade pelitic rocks containing kyanite, sillimanite and/or staurolite are present. It is possible that sample MA-120 from Dickey Lake might also be related to nearby higher grade metamorphic rocks.

The only sample not fitting this pattern is a contaminated sample from near Malone (MA-005), which contains 0.5% staurolite.

Orthopyroxene

Within the study area, the presence of orthopyroxene can not always be attributed to the presence of mafic intrusive rocks, as 2 potential source rocks exist for orthopyroxene—namely magmatic and high-grade metamorphic rocks. High-grade metamorphic rocks occur in the southwestern part of the study area, which is underlain by low-pressure granulite facies rocks of Frontenac terrane. The presence of these 2 sources can be observed in the data collected by this study.

Several samples from the study area containing between 0.5 and 2% orthopyroxene are located adjacent to known mafic to ultramafic intrusions. For example, samples TH-066 and MA-155 occur proximal to mafic and ultramafic plutons of the Killer Creek gabbro suite, and samples MA-016, MA-064, MA-134 occur proximal to mafic plutons of the Methuen gabbro suite. These samples occur as geographically isolated occurrences.

In contrast, samples potentially derived from high-grade metamorphic rocks show a geographic clustering. Samples TM-042, TM-045 and MA-103 from the area underlying Frontenac terrane rocks, contain between 1 and 15% orthopyroxene, and many of the adjacent samples contain trace amounts of orthopyroxene. Orthopyroxene in these samples is likely metamorphic in origin.

Conclusions

KIMBERLITE AND RELATED ROCKS

The primary objective of this survey was to create a regional data set on the types and distribution of kimberlite indicator minerals by means of modern alluvium and till sampling. This objective was successfully fulfilled, however, results indicate that the potential for finding additional kimberlite bodies or related rock in the area is low as important KIMs and diamond potential indicators, such as G10 garnets and diamond inclusion chromites, were lacking in all sample types collected.

This study has also revealed the difficulty in collecting samples unaffected by anthropogenic activity in more populated parts of the province that have a long history of settlement. In addition, the presence of high-grade metamorphic rocks in parts of the study area requires reasonable knowledge of the local geology in order to interpret the results of any modern alluvium survey in the area.

BASE METALS AND GOLD

The Central Metasedimentary Belt hosts many of Ontario's first mines, which produced iron, zinc, lead and pyrite from the study area. Copper, nickel and gold prospects are also common throughout the belt within the study area. As such, further exploration of identified anomalous sites is warranted.

Although the recovered number of gold grains in the survey was not high, further exploration is warranted in Grimsthorpe and Kaladar townships, where high numbers of pristine grains were found in the vicinity of known gold-bearing structures.

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Appendix 1

Sample Site Locations

UTM co-ordinates in North American Datum 1983 (NAD83), Zone 18

Summary of Prefixes used in Sample Numbers:

MA	Modern Alluvium
SG	Sand and Gravel
TM	Till Matrix

Shaded samples are ones identified as having heavy mineral/metal contamination.

SAMPLE NUMBER	UTM	
	EASTING	NORTHING
04-JR-MA-001	292312	4930370
04-JR-MA-002	294531	4927927
04-JR-MA-003	297067	4925550
04-JR-MA-004	292670	4934949
04-JR-MA-005	293301	4937711
04-JR-MA-006	293563	4939447
04-JR-MA-007	295471	4939915
04-JR-MA-008	298130	4941035
04-JR-MA-009	298730	4937460
04-JR-MA-010	297492	4939892
04-JR-MA-011	291912	4940350
04-JR-MA-012	291133	4940318
04-JR-MA-013	286493	4940859
04-JR-MA-014	286685	4934842
04-JR-MA-015	286178	4933424
04-JR-MA-016	285711	4934755
04-JR-MA-017	285056	4935636
04-JR-MA-018	283934	4932680
04-JR-MA-019	303976	4932607
04-JR-MA-020	299827	4932436
04-JR-MA-021	304658	4933998
04-JR-MA-022	300380	4943645
04-JR-MA-023	306557	4933273
04-JR-MA-024	298859	4943824
04-JR-MA-025	306452	4934559
04-JR-MA-026	297500	4942731
04-JR-MA-027	305085	4943857
04-JR-MA-028	298344	4944334
04-JR-MA-029	324772	4966526
04-JR-MA-030	298066	4946685
04-JR-MA-031	303907	4944343
04-JR-MA-032	300989	4946171
04-JR-MA-033	302880	4939961
04-JR-MA-034	294074	4951694
04-JR-MA-035	308967	4951176
04-JR-MA-036	294046	4954641
04-JR-MA-037	308004	4949782
04-JR-MA-038	319600	4969555
04-JR-MA-039	324499	4968917
04-JR-MA-040	281577	4939685
04-JR-MA-041	309875	4938852
04-JR-MA-042	297201	4947633
04-JR-MA-043	308468	4939939
04-JR-MA-044	294032	4954201
04-JR-MA-045	309876	4931291
04-JR-MA-046	287290	4957874
04-JR-MA-047	311361	4935003
04-JR-MA-048	286122	4957233
04-JR-MA-049	312731	4933232

SAMPLE NUMBER	UTM	
	EASTING	NORTHING
04-JR-MA-050	292965	4949832
04-JR-MA-051	316512	4937172
04-JR-MA-052	276184	4941772
04-JR-MA-053	315947	4937513
04-JR-MA-054	299335	4970108
04-JR-MA-055	328409	4931107
04-JR-MA-056	297866	4972709
04-JR-MA-057	323947	4929955
04-JR-MA-058	294392	4969998
04-JR-MA-059	321891	4930508
04-JR-MA-060	287758	4959000
04-JR-MA-061	320630	4931409
04-JR-MA-062	292767	4966849
04-JR-MA-063	318632	4934361
04-JR-MA-064	283770	4969876
04-JR-MA-065	320904	4936572
04-JR-MA-066	280474	4965219
04-JR-MA-067	321205	4938637
04-JR-MA-068	271961	4961530
04-JR-MA-069	322918	4942216
04-JR-MA-070	319262	4923647
04-JR-MA-071	323650	4949703
04-JR-MA-072	327558	4924954
04-JR-MA-073	321908	4950821
04-JR-MA-074	328538	4923860
04-JR-MA-075	321114	4948967
04-JR-MA-076	330101	4924380
04-JR-MA-077	319502	4946163
04-JR-MA-078	323148	4929284
04-JR-MA-079	321456	4945445
04-JR-MA-080	311437	4927650
04-JR-MA-081	320056	4936997
04-JR-MA-082	322612	4917571
04-JR-MA-083	331540	4956440
04-JR-MA-084	315790	4919473
04-JR-MA-085	332684	4956697
04-JR-MA-086	314582	4923175
04-JR-MA-087	334557	4933422
04-JR-MA-088	314469	4925121
04-JR-MA-089	347191	4953489
04-JR-MA-090	310875	4923933
04-JR-MA-091	345855	4953961
04-JR-MA-092	338001	4922393
04-JR-MA-093	345947	4948[illegible]16
04-JR-MA-094	341770	4926717
04-JR-MA-095	342988	4945439
04-JR-MA-096	343457	4927533
04-JR-MA-097	338552	4932263
04-JR-MA-098	341454	4924421

SAMPLE NUMBER	UTM	
	EASTING	NORTHING
04-JR-MA-099	347533	4929348
04-JR-MA-100	345519	4923362
04-JR-MA-101	366197	4944796
04-JR-MA-102	349409	4924289
04-JR-MA-103	362103	4945958
04-JR-MA-104	328610	4968598
04-JR-MA-105	358225	4954020
04-JR-MA-106	332415	4965176
04-JR-MA-107	359405	4955355
04-JR-MA-108	324835	4960175
04-JR-MA-109	356153	4952388
04-JR-MA-110	303685	4967927
04-JR-MA-111	356552	4949655
04-JR-MA-112	337059	4973253
04-JR-MA-113	364816	4933608
04-JR-MA-114	325734	4976550
04-JR-MA-115	366860	4931025
04-JR-MA-116	323507	4981035
04-JR-MA-117	361946	4936814
04-JR-MA-118	319841	4982724
04-JR-MA-119	361630	4929294
04-JR-MA-120	282996	4964236
04-JR-MA-121	355290	4930266
04-JR-MA-122	284387	4962330
04-JR-MA-123	355998	4932639
04-JR-MA-124	282140	4963583
04-JR-MA-125	350644	4933469
04-JR-MA-126	275231	4956433
04-JR-MA-127	350665	4929795
04-JR-MA-128	274392	4957068
04-JR-MA-129	349804	4936895
04-JR-MA-130	274764	4954948
04-JR-MA-131	277757	4932787
04-JR-MA-132	274540	4954939
04-JR-MA-133	276131	4937578
04-JR-MA-134	276488	4955140
04-JR-MA-135	278065	4938776
04-JR-MA-136	289107	4967585
04-JR-MA-137	286489	4967706
04-JR-MA-138	286379	4967272
04-JR-MA-139	287212	4965941
04-JR-MA-140	300379	4974815
04-JR-MA-141	297667	4978635
04-JR-MA-142	298095	4980444
04-JR-MA-143	300830	4981180
04-JR-MA-144	299550	4982596
04-JR-MA-145	299775	4984202
04-JR-MA-146	309359	4957736
04-JR-MA-147	277583	4951899
04-JR-MA-148	309856	4956190

SAMPLE NUMBER	UTM	
	EASTING	NORTHING
04-JR-MA-149	310385	4954516
04-JR-MA-150	323240	4968863
04-JR-MA-151	290973	4942692
04-JR-MA-152	310186	4953518
04-JR-MA-153	319960	4955704
04-JR-MA-154	318031	4956404
04-JR-MA-155	317686	4956377
04-JR-MA-156	285371	4946934
04-JR-MA-157	285560	4945718
04-JR-MA-158	285638	4944102
04-JR-MA-159	311316	4974597
04-JR-MA-160	286601	4949102
04-JR-MA-161	315623	4980786
04-JR-TM-001	297049	4928012
04-JR-TM-002	293538	4939524
04-JR-TM-003	295112	4939858
04-JR-TM-004	298704	4937442
04-JR-TM-005	290018	4938752
04-JR-TM-006	304308	4934246
04-JR-TM-007	305896	4935685
04-JR-TM-008	305320	4943860
04-JR-TM-009	305773	4934345
04-JR-TM-010	305454	4937131
04-JR-TM-011	305382	4937360
04-JR-TM-012	305782	4947288
04-JR-TM-013	304891	4947016
04-JR-TM-014	311272	4946793
04-JR-TM-015	311510	4943500
04-JR-TM-016	311519	4941878
04-JR-TM-017	310769	4941347
04-JR-TM-018	317944	4939659
04-JR-TM-019	306706	4939776
04-JR-TM-020	307890	4935566
04-JR-TM-021	325034	4932831
04-JR-TM-022	318949	4933597
04-JR-TM-023	322798	4941531
04-JR-TM-024	323501	4945049
04-JR-TM-025	320689	4937340
04-JR-TM-026	320466	4943824
04-JR-TM-027	325568	4952014
04-JR-TM-028	325387	4956651
04-JR-TM-029	332494	4931201
04-JR-TM-030	333199	4930653
04-JR-TM-031	342004	4949242
04-JR-TM-032	350451	4953451
04-JR-TM-033	346477	4946546
04-JR-TM-034	342805	4941267
04-JR-TM-035	340964	4938735
04-JR-TM-036	340462	4935202
04-JR-TM-037	341769	4931910

SAMPLE NUMBER	UTM	
	EASTING	NORTHING
04-JR-TM-038	339952	4931483
04-JR-TM-039	368825	4946140
04-JR-TM-040	368647	4944681
04-JR-TM-041	356855	4942519
04-JR-TM-042	356265	4942450
04-JR-TM-043	352383	4940434
04-JR-TM-044	354972	4955788
04-JR-TM-045	355581	4936494
04-JR-TM-046	356231	4945504
04-JR-TM-047	276607	4934817
04-JR-TM-048	333540	4933371
04-JR-TM-049	334155	4932070
04-JR-TM-050	340759	4926153
04-JR-TM-051	328317	4966628
04-JR-TM-052	331858	4938085
04-JR-TM-053	331745	4940225
04-JR-TM-054	330316	4948153
04-JR-TM-055	329141	4951204
04-JR-TM-056	329007	4953341
04-JR-TM-057	330019	4949756
04-JR-TM-058	331017	4947180
04-JR-TM-059	299706	4969774
04-JR-TM-060	301269	4969250
04-JR-TM-061	304454	4967955
04-JR-TM-062	305664	4967815
04-JR-TM-063	305687	4967224

SAMPLE NUMBER	UTM	
	EASTING	NORTHING
04-JR-TM-064	308480	4968903
04-JR-TM-065	316322	4967247
04-JR-TM-066	323706	4965547
04-JR-TM-067	291040	4967321
04-JR-TM-068	292771	4961337
04-JR-TM-069	293095	4957124
04-JR-TM-070	300253	4982587
04-JR-TM-071	304785	4981396
04-JR-TM-072	291165	4949060
04-JR-TM-073	309392	4972639
04-JR-TM-074	312781	4975913
04-JR-SG-001	292652	4935561
04-JR-SG-002	314183	4933178
04-JR-SG-003	290418	4971345
04-JR-SG-004	315949	4925088
04-JR-SG-005	313096	4930700
04-JR-SG-006	342447	4924492
04-JR-SG-007	324073	4946680
04-JR-SG-008	327934	4968222
04-JR-SG-009	325862	4954310
04-JR-SG-010	303873	4967874
04-JR-SG-011	372411	4938894
04-JR-SG-012	306145	4982243
04-JR-SG-013	368751	4936296
04-JR-SG-014	309111	4984095
04-JR-SG-015	367706	4935925

Appendix 2

Sample Tabling Data

Abbreviations

G	Granular (<6 mm)	B	Beige
P	Pebbles (6 mm to 5 cm)	GY	Grey
C	Cobbles (>5 cm)	OC	Ocre
V/S	Volcanics/Sediments	LOC	Light Ocre
GR	Granitics	MOC	Medium Ocre
LS	Limestone	DOC	Dark Ocre
OT:	Other	BN	Brown
S/U	Sorted/Unsorted	PK	Pink
SD	Sand	GYB	Grey-Beige
F	Fine		
M	Medium		
C	Coarse		
ST	Silt		
CY	Clay		

Shaded samples are ones identified as having heavy mineral/metal contamination.

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-MA-001	10.1	9.6	1.9	7.7	G	20	80	0	0	S	MC	N	N	N	BN	NA	SAND & GRAVEL
04JR-MA-002	12.4	11.9	2.7	9.2	G	100	0	0	0	S	FMC	N	N	Y	BN	NA	SAND & GRAVEL
04JR-MA-003	9.6	9.1	2.5	6.6	G	30	70	0	0	S	MC	N	N	Y	BN	NA	SAND & GRAVEL
04JR-MA-004	12.5	12.0	0.0	12.0	No Clasts					S	F	N	N	+	BN	NA	SAND + MUCK
04JR-MA-005	8.5	8.0	2.5	5.5	G	5	95	0	0	S	MC	N	N	N	BN	NA	SAND & GRAVEL
04JR-MA-006	9.7	9.2	2.1	7.1	G	20	80	0	0	S	MC	N	N	N	BN	NA	SAND & GRAVEL
04JR-MA-007	10.2	9.7	1.8	7.9	G	5	95	0	0	S	MC	N	N	N	BN	NA	SAND & GRAVEL
04JR-MA-008	10.3	9.8	3.4	6.4	G	5	95	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-009	9.8	9.3	0.8	8.5	G	Tr	100	0	0	S	FM	N	N	Y	LOC	NA	SAND
04JR-MA-010	13.5	13.0	0.0	13.0	No Clasts					S	F	N	N	+	BN	NA	SAND + MUCK
04JR-MA-011	11.0	10.5	0.0	10.5	No Clasts					S	F	N	N	+	BN	NA	SAND + MUCK
04JR-MA-012	9.1	8.6	0.4	8.2	G	100	0	0	0	S	FM	N	N	Y	BN	NA	SAND
04JR-MA-013	9.8	9.3	0.4	8.9	G	80	20	0	0	S	FMC	N	N	Y	LOC	NA	SAND
04JR-MA-014	11.6	11.1	0.0	11.1	No Clasts					S	F	N	N	Y	BN	NA	SAND
04JR-MA-015	12.4	11.9	0.1	11.8	G	Tr	100	0	0	S	FM	N	N	N	BN	NA	SAND
04JR-MA-016	10.2	9.7	1.3	8.4	G	95	5	0	0	S	FMC	N	N	Y	MOC	NA	SAND & GRAVEL
04JR-MA-017	11.0	10.5	0.1	10.4	G	100	0	0	0	S	FM	N	N	Y	BE	NA	SAND
04JR-MA-018	12.3	11.8	0.0	11.8	No Clasts					S	F	Y	N	+	LOC	NA	SAND + MUCK
04JR-MA-019	10.9	10.4	2.2	8.2	P	85	5	10	0	S	MC	N	N	Y	BE	NA	SAND & GRAVEL
04JR-MA-020	12.8	12.3	0.8	11.5	P	20	75	5	0	S	FM	N	N	Y	LOC	NA	SAND
04JR-MA-021	10.5	10.0	0.9	9.1	G	95	5	0	0	S	MC	N	N	Y	GY	NA	SAND
04JR-MA-022	11.9	11.4	0.3	11.1	G	5	95	Tr	0	S	MC	N	N	Y	LOC	NA	SAND
04JR-MA-023	12.2	11.7	0.1	11.6	G	100	Tr	0	0	S	FM	N	N	Y	LBN	NA	SAND
04JR-MA-024	11.6	11.1	1.5	9.6	P	100	Tr	0	0	S	MC	N	N	Y	BE	NA	SAND & GRAVEL
04JR-MA-025	9.2	3.7	0.0	3.7	No Clasts					S	F	Y	N	Y	LBN	NA	SAND
04JR-MA-026	13.2	12.7	0.3	12.4	G	100	Tr	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-027	9.2	8.7	0.0	8.7	No Clasts					S	F	Y	N	Y	LOC	NA	SAND
04JR-MA-028	10.9	10.4	0.2	10.2	P	100	Tr	0	0	S	MC	N	N	Y	GY	NA	SAND
04JR-MA-029	10.3	9.8	0.1	9.7	G	0	100	0	0	S	FM	N	-	Y	BN	BN	SAND
04JR-MA-030	10.1	9.6	0.2	9.4	P	100	Tr	0	0	S	MC	Y	N	Y	GY	NA	SAND
04JR-MA-031	11.4	10.9	0.2	10.7	P	100	Tr	0	0	S	F	Y	N	Y	LBN	NA	SAND
04JR-MA-032	10.9	10.4	0.5	9.9	P	100	0	0	0	S	MC	N	N	Y	LBN	NA	SAND
04JR-MA-033	10.1	9.6	0.0	9.6	No Clasts					S	F	Y	N	Y	LBN	NA	SAND

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-MA-034	10.6	10.1	0.8	9.3	G	5	95	0	0	S	MC	N	N	Y	BE	NA	SAND
04JR-MA-035	13.8	13.3	0.1	13.2	P	100	Tr	0	0	S	F	+	N	Y	LOC	NA	SAND + SILT
04JR-MA-036	10.2	9.7	0.1	9.6	G	100	Tr	0	0	S	FM	Y	N	Y	LOC	NA	SAND
04JR-MA-037	6.3	5.8	3.1	2.7	P	100	Tr	0	0	S	MC	N	N	N	DOC	NA	SAND & GRAVEL
04JR-MA-038	16.5	16.0	0.4	15.6	G	0	100	0	0	S	MC	N	N	N	BE	BE	SAND
04JR-MA-039	11.1	10.6	0.6	10.0	P	0	100	0	0	S	MC	N	N	N	LOC	LOC	SAND & GRAVEL
04JR-MA-040	9.8	9.3	1.5	7.8	G	100	Tr	0	0	S	MC	N	N	N	BN	NA	SAND & GRAVEL
04JR-MA-041	14.1	13.6	1.1	12.5	P	95	5	0	0	S	MC	-	-	Y	GY	NA	SAND & GRAVEL
04JR-MA-042	11.5	11.0	0.2	10.8	P	100	Tr	0	0	S	MC	-	-	+	GY	NA	SAND + MUCK
04JR-MA-043	15.9	15.4	0.0	15.4	No Clasts					S	FM	-	-	Y	BE	NA	SAND
04JR-MA-044	8.7	8.2	0.4	7.8	P	100	0	0	0	S	FM	-	-	Y	GY	NA	SAND
04JR-MA-045	10.9	10.4	2.6	7.8	P	5	95	0	0	S	MC	-	-	Y	LOC	NA	SAND & GRAVEL
04JR-MA-046	10.5	10.0	1.2	8.8	P	20	80	0	0	S	MC	N	N	Y	GY	NA	SAND
04JR-MA-047	12.1	11.6	0.2	11.4	P	60	40	0	0	S	FM	-	N	Y	LBN	NA	SAND
04JR-MA-048	11.3	10.8	0.2	10.6	P	60	40	0	0	S	MC	-	N	Y	LBN	NA	SAND
04JR-MA-049	11.6	11.1	0.2	10.9	P	100	Tr	0	0	S	FM	-	N	Y	LOC	NA	SAND
04JR-MA-050	6.0	5.5	0.3	5.2	P	100	Tr	0	0	S	MC	-	N	+	LBN	NA	SAND
04JR-MA-051	13.1	12.6	0.4	12.2	P	100	Tr	0	0	S	MC	-	N	N	LOC	NA	SAND
04JR-MA-052	8.4	7.9	0.4	7.5	P	100	Tr	0	0	S	MC	-	N	Y	LBN	NA	SAND
04JR-MA-053	13.2	12.7	0.1	12.6	P	80	20	0	0	S	FM	-	N	Y	LOC	NA	SAND
04JR-MA-054	9.0	8.5	0.4	8.1	P	100	Tr	0	0	S	MC	N	N	+	GY	NA	SAND + MUCK
04JR-MA-055	8.8	8.3	1.4	6.9	P	40	60	0	0	S	C	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-056	13.0	12.5	0.6	11.9	P	40	60	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-057	12.8	12.3	0.1	12.2	P	100	Tr	0	0	S	F	N	N	+	LO	NA	SAND + MUCK
04JR-MA-058	10.3	9.8	2.0	7.8	P	100	Tr	0	0	S	MC	N	N	Y	BE	NA	SAND & GRAVEL
04JR-MA-059	14.9	14.4	0.0	14.4	No Clasts					S	F	N	N	+	BE	NA	SAND + MUCK
04JR-MA-060	9.9	9.4	4.7	4.7	P	20	80	0	0	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-MA-061	9.4	8.9	0.0	8.9	No Clasts					S	F	N	N	+	LOC	NA	SAND + MUCK
04JR-MA-062	11.8	11.3	0.3	11.0	G	10	90	0	0	S	FM	N	N	Y	BE	NA	SAND
04JR-MA-063	12.3	11.8	0.0	11.8	No Clasts					S	F	N	N	+	LOC	NA	SAND + MUCK
04JR-MA-064	8.5	8.0	0.0	8.0	No Clasts					S	FM	N	N	Y	LOC	NA	SAND
04JR-MA-065	12.6	12.1	0.1	12.0	G	10	90	0	0	S	MC	N	N	Y	MOC	NA	SAND
04JR-MA-066	8.4	7.9	0.0	7.9	No Clasts					S	F	N	N	Y	BE	NA	SAND

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-MA-067	10.3	9.8	0.0	9.8	No Clasts					S	F	N	N	Y	BE	NA	SAND
04JR-MA-068	8.9	8.4	0.1	8.3	G	30	70	0	0	S	FMC	N	N	Y	BE	NA	SAND
04JR-MA-069	9.2	8.7	1.7	7.0	P	5	95	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-070	8.2	7.7	0.3	7.4	G	30	70	0	0	S	FMC	N	N	Y	BE	NA	SAND
04JR-MA-071	10.8	10.3	0.2	10.1	G	5	95	0	0	S	MC	N	N	Y	LOC	NA	SAND
04JR-MA-072	9.0	8.5	1.4	7.1	P	Tr	100	0	0	S	MC	N	N	Y	GY	NA	SAND & GRAVEL
04JR-MA-073	12.1	11.6	2.6	9.0	P	10	90	0	0	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-MA-074	9.3	8.8	1.6	7.2	P	Tr	100	0	0	S	MC	N	N	N	BE	NA	SAND & GRAVEL
04JR-MA-075	15.8	15.3	0.0	15.3	No Clasts					S	FM	N	N	Y	GY	NA	SAND
04JR-MA-076	7.5	7.0	0.1	6.9	G	40	60	0	0	S	FM	N	N	Y	LOC	NA	SAND
04JR-MA-077	10.4	9.9	0.5	9.4	P	Tr	100	0	0	S	FMC	N	N	Y	LOC	NA	SAND
04JR-MA-078	11.4	10.9	0.1	10.8	G	95	5	0	0	S	F	Y	N	+	BE	NA	SAND + MUCK
04JR-MA-079	11.2	10.7	0.0	10.7	No Clasts					S	F	N	N	Y	LOC	NA	SAND
04JR-MA-080	11.2	10.7	0.0	10.7	No Clasts					S	F	N	N	Y	LOC	NA	SAND
04JR-MA-081	9.4	8.9	0.0	8.9	No Clasts					S	M	N	N	Y	LOC	NA	SAND
04JR-MA-082	8.8	8.3	0.0	8.3	No Clasts					S	F	N	N	+	GY	NA	SAND + MUCK
04JR-MA-083	11.2	10.7	0.0	10.7	No Clasts					S	F	N	N	Y	LOC	NA	SAND
04JR-MA-084	11.1	10.6	0.2	10.4	P	5	95	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-085	10.5	10.0	0.1	9.9	G	Tr	100	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-086	9.9	9.4	4.1	5.3	P	70	30	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-087	7.4	6.9	1.6	5.3	P	20	80	0	0	S	C	N	N	Y	MOC	NA	SAND & GRAVEL
04JR-MA-088	9.9	9.4	1.4	8.0	P	55	45	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-089	11.5	11.0	0.1	10.9	P	35	65	0	0	S	F	Y	-	Y	BE	BE	SAND + SILT
04JR-MA-090	8.1	7.6	1.8	5.8	P	45	55	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-091	10.9	10.4	0.0	10.4	No Clasts					S	F	+	-	Y	BE	BE	SAND + SILT
04JR-MA-092	9.2	8.7	0.4	8.3	P	70	30	0	0	S	F	N	N	Y	LOC	NA	SAND
04JR-MA-093	12.3	11.8	0.0	11.8	No Clasts					S	F	N	N	Y	LOC	NA	SAND
04JR-MA-094	10.2	9.7	3.2	6.5	P	40	60	0	0	S	MC	N	N	Y	MOC	NA	SAND & GRAVEL
04JR-MA-095	9.2	8.7	0.5	8.2	P	Tr	100	0	0	S	MC	N	N	Y	BE	NA	SAND
04JR-MA-096	12.3	11.8	2.8	9.0	P	10	90	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-097	10.9	10.4	0.1	10.3	P	Tr	100	0	0	S	FM	N	N	Y	BE	NA	SAND
04JR-MA-098	9.3	8.8	0.4	8.4	P	Tr	100	0	0	S	F	N	N	+	GY	NA	SAND + MUCK
04JR-MA-099	10.9	10.4	2.3	8.1	P	20	80	0	0	S	MC	N	N	Y	BE	NA	SAND & GRAVEL

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-MA-100	11.2	10.7	1.5	9.2	P	10	90	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-101	9.9	9.4	1.9	7.5	G	0	100	0	0	S	MC	N	N	Y	GY	NA	SAND & GRAVEL
04JR-MA-102	8.3	7.8	0.3	7.5	G	100	Tr	0	0	S	F	+	-	Y	GY	GY	SAND + SILT
04JR-MA-103	9.5	9.0	1.6	7.4	G	10	90	Tr	0	S	FMC	N	N	Y	BE	NA	SAND & GRAVEL
04JR-MA-104	9.9	9.4	1.0	8.4	G	40	60	0	0	S	FMC	N	N	N	GY	NA	SAND & GRAVEL
04JR-MA-105	9.6	9.1	0.1	9.0	G	Tr	100	0	0	S	F	N	N	Y	BN	NA	SAND
04JR-MA-106	13.3	12.8	0.0	12.8	No Clasts					S	F	N	N	Y	BE	NA	SAND
04JR-MA-107	11.9	11.4	2.2	9.2	P	40	60	0	0	S	FMC	N	N	Y	GB	NA	SAND & GRAVEL
04JR-MA-108	10.2	9.7	0.8	8.9	G	5	95	0	0	S	MC	-	N	N	LOC	NA	SAND
04JR-MA-109	10.4	9.9	0.2	9.7	P	Tr	100	0	0	S	F	+	-	N	GY	GY	SAND + SILT
04JR-MA-110	9.6	9.1	0.7	8.4	P	20	80	0	0	S	FM	N	N	Y	BN	NA	SAND
04JR-MA-111	12.4	11.9	0.5	11.4	P	10	90	0	0	S	FM	N	N	Y	DOC	DOC	SAND
04JR-MA-112	9.6	9.1	0.6	8.5	G	Tr	100	0	0	S	MC	N	N	Y	MOC	NA	SAND
04JR-MA-113	8.9	8.4	1.7	6.7	P	40	60	0	0	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-MA-114	9.1	8.6	1.4	7.2	G	20	80	0	0	S	FMC	N	N	N	MOC	NA	SAND & GRAVEL
04JR-MA-115	9.9	9.4	0.2	9.2	G	Tr	100	0	0	S	F	N	N	Y	GY	GY	SAND
04JR-MA-116	11.4	10.9	0.9	10.0	G	Tr	100	0	0	S	FM	N	N	N	LOC	NA	SAND
04JR-MA-117	9.3	8.8	0.0	8.8	No Clasts					S	FM	N	N	Y	GB	NA	SAND
04JR-MA-118	10.8	10.3	2.3	8.0	G	Tr	100	0	0	S	MC	N	N	Y	LOC	NA	SAND & GRAVEL
04JR-MA-119	8.0	7.5	0.0	7.5	No Clasts					S	F	N	N	Y	LOC	NA	SAND
04JR-MA-120	10.9	10.4	1.4	9.0	G	80	20	0	0	S	FMC	N	N	Y	GB	NA	SAND & GRAVEL
04JR-MA-121	9.8	9.3	0.2	9.1	G	Tr	100	0	0	S	FM	N	N	Y	LOC	NA	SAND
04JR-MA-122	10.4	9.9	1.0	8.9	P	0	100	0	0	S	FMC	N	N	N	GY	NA	SAND & GRAVEL
04JR-MA-123	9.4	8.9	1.2	7.7	P	0	100	0	0	S	FMC	N	N	N	GY	NA	SAND & GRAVEL
04JR-MA-124	10.6	10.5	0.1	10.4	P	0	100	0	0	S	FM	N	N	N	BE	NA	SAND
04JR-MA-125	10.8	10.3	0.6	9.7	P	0	100	0	0	S	FM	N	N	N	GY	NA	SAND
04JR-MA-126	9.4	8.9	0.1	8.8	P	0	100	0	0	S	FM	N	N	N	GY	NA	SAND
04JR-MA-127	9.2	8.7	0.1	8.6	P	0	100	0	0	S	M	N	N	N	OC	NA	SAND
04JR-MA-128	9.7	9.2	0.0	9.2	No Clasts					S	F	N	N	N	GY	NA	SAND
04JR-MA-129	9.5	9.0	0.3	8.7	P	0	100	0	0	S	FM	N	N	N	OC	NA	SAND
04JR-MA-130	11.1	10.6	0.1	10.5	P	0	100	0	0	S	FMC	N	N	N	OC	NA	SAND
04JR-MA-131	9.8	9.3	0.0	9.3	No Clasts					S	FM	N	N	N	BE	NA	SAND
04JR-MA-132	10.5	10.0	0.1	9.9	P	0	100	0	0	S	FM	N	N	N	GY	NA	SAND

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-MA-133	9.4	8.9	0.0	8.9	No Clasts					S	FM	N	N	N	GB	NA	SAND
04JR-MA-134	10.9	10.4	0.0	10.4	No Clasts					S	F	N	N	Y	GY	NA	SAND
04JR-MA-135	9.2	8.7	0.0	8.7	No Clasts					S	F	N	N	Y	GY	NA	SAND
04JR-MA-136	11.3	10.8	0.1	10.7	P	0	100	0	0	S	FM	N	N	N	GY	NA	SAND
04JR-MA-137	9.6	9.1	0.0	9.1	No Clasts					S	F	N	N	N	GY	NA	SAND
04JR-MA-138	14.7	14.2	2.4	11.8	P	40	60	0	0	S	FMC	N	N	Y	GY	NA	SAND & GRAVEL
04JR-MA-139	10.5	10.0	0.2	9.8	P	0	100	0	0	S	M	N	N	N	GB	NA	SAND
04JR-MA-140	10.6	10.1	1.5	8.6	P	30	70	0	0	S	FMC	N	N	N	OC	NA	SAND & GRAVEL
04JR-MA-141	9.0	8.5	0.5	8.0	P	0	100	0	0	S	FM	N	N	N	BE	NA	SAND
04JR-MA-142	11.8	11.3	0.2	11.1	G	100	0	0	0	S	MC	N	N	N	GY	NA	SAND
04JR-MA-143	9.6	9.1	1.9	7.2	P	5	95	0	0	S	MC	N	N	N	OC	NA	SAND & GRAVEL
04JR-MA-144	11.6	11.1	0.4	10.7	No Clasts					S	F	N	N	Y	GY	NA	SAND
04JR-MA-145	10.0	9.5	1.9	7.6	P	30	70	0	0	S	MC	N	N	N	DOC	NA	SAND & GRAVEL
04JR-MA-146	5.7	5.2	1.6	3.6	P	95	5	0	0	S	MC	N	N	N	DOC	NA	SAND & GRAVEL
04JR-MA-147	9.4	8.9	1.6	7.3	P	20	80	0	0	S	MC	N	N	N	DOC	NA	SAND & GRAVEL
04JR-MA-148	6.7	6.2	0.5	5.7	P	100	0	0	0	S	MC	N	N	N	DGY	NA	SAND
04JR-MA-149	7.5	7.0	0.0	7.0	No Clasts					S	FM	N	N	N	BE	NA	SAND
04JR-MA-150	9.6	9.1	0.0	9.1	No Clasts					S	FM	N	N	N	BE	NA	SAND
04JR-MA-151	10.4	9.9	0.7	9.2	P	5	95	0	0	S	M	N	N	N	GY	NA	SAND
04JR-MA-152	8.9	8.4	0.2	8.2	No Clasts					S	F	N	N	N	BE	NA	SAND
04JR-MA-153	9.2	8.7	2.1	6.6	G	0	100	0	0	S	MC	N	N	N	OC	NA	SAND & GRAVEL
04JR-MA-154	9.1	8.6	2.2	6.4	G	Tr	100	0	0	S	MC	N	N	N	OC	NA	SAND & GRAVEL
04JR-MA-155	10.6	10.1	1.7	8.4	G	0	100	0	0	S	MC	N	N	N	BE	NA	SAND & GRAVEL
04JR-MA-156	9.7	9.2	0.9	8.3	P	20	80	0	0	S	FM	N	N	N	OC	NA	SAND
04JR-MA-157	8.5	8.0	1.1	6.9	P	20	80	0	0	S	MC	N	N	N	OC	NA	SAND & GRAVEL
04JR-MA-158	9.4	8.9	0.1	8.8	P	5	95	0	0	S	FM	N	N	N	BE	NA	SAND
04JR-MA-159	12.3	11.8	1.6	10.2	P	20	80	0	0	S	FMC	N	N	N	OC	NA	SAND & GRAVEL
04JR-MA-160	10.3	9.8	0.2	9.6	P	Tr	100	0	0	S	FM	N	N	N	GY	NA	SAND
04JR-MA-161	11.0	10.5	1.0	9.5	P	Tr	100	0	0	S	MC	N	N	N	BE	NA	SAND & GRAVEL
04JR-TM-001	9.5	9.0	0.8	8.2	P	0	40	60	0	U	Y	Y	Y	N	BN	BN	TILL
04JR-TM-002	8.8	8.3	2.0	6.3	P	0	50	50	0	U	Y	Y	Y	N	BN	BN	TILL
04JR-TM-003	8.6	8.1	2.7	5.4	P	0	50	50	0	U	Y	Y	Y	N	OC	OC	TILL
04JR-TM-004	8.2	7.7	0.6	7.1	P	0	95	5	0	U	Y	Y	Y	N	PK	PK	TILL

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-TM-005	9.5	9.0	2.0	7.0	P	0	60	40	0	S	MC	-	N	N	OC	NA	SAND & GRAVEL
04JR-TM-006	9.9	9.4	2.3	7.1	P	0	50	50	0	S	MC	N	N	N	GB	NA	SAND & GRAVEL
04JR-TM-007	9.9	9.4	1.4	8.0	P	0	30	70	0	U	+	-	-	N	GB	BE	SANDY TILL
04JR-TM-008	7.5	7.0	1.2	5.8	P	0	40	60	0	U	+	-	-	N	GB	BE	SANDY TILL
04JR-TM-009	10.5	10.0	1.0	9.0	P	0	50	50	0	U	Y	Y	Y	N	PK	PK	TILL
04JR-TM-010	8.7	8.2	0.6	7.6	P	0	100	0	0	U	Y	Y	Y	N	OC	OC	TILL
04JR-TM-011	8.9	8.4	0.3	8.1	P	0	50	50	0	U	-	+	+	N	PK	PK	TILL
04JR-TM-012	7.8	7.3	1.2	6.1	P	0	5	95	0	U	Y	Y	Y	N	PK	PK	TILL
04JR-TM-013	9.9	9.4	1.8	7.6	P	0	1	99	0	U	Y	Y	Y	N	GY	GY	TILL
04JR-TM-014	11.7	11.2	0.7	10.5	P	20	80	0	0	U	Y	Y	Y	N	DOC	DOC	TILL
04JR-TM-015	11.8	11.3	0.4	10.9	P	Tr	100	0	0	S	FM	N	N	N	LOC	NA	SAND
04JR-TM-016	8.8	8.3	3.2	5.1	P	100	Tr	0	0	U	Y	Y	Y	N	OC	OC	TILL
04JR-TM-017	9.3	8.8	4.4	4.4	P	20	Tr	80	0	U	Y	Y	Y	N	PK	PK	TILL
04JR-TM-018	11.1	10.6	2.0	8.6	P	5	95	0	0	U	+	-	N	N	OC	OC	SANDY TILL
04JR-TM-019	14.3	13.8	2.6	11.2	P	20	80	0	0	U	+	-	N	N	LOC	LOC	SANDY TILL
04JR-TM-020	9.2	8.7	2.1	6.6	P	25	5	70	0	S	MC	-	N	N	BN	NA	SAND & GRAVEL
04JR-TM-021	9.8	9.3	0.7	8.6	G	0	100	0	0	U	Y	Y	Y	N	OC	OC	TILL
04JR-TM-022	11.8	11.3	0.8	10.5	G	20	80	0	0	U	+	-	-	N	OC	OC	SANDY TILL
04JR-TM-023	10.6	10.1	0.3	9.8	G	20	80	0	0	S	MC	N	N	N	BE	NA	SAND
04JR-TM-024	10.2	9.7	0.5	9.2	G	10	90	0	0	S	FM	-	N	N	OC	NA	SAND
04JR-TM-025	7.3	6.8	1.4	5.4	P	20	80	0	0	U	+	Y	-	N	OC	OC	TILL
04JR-TM-026	9.9	9.4	0.9	8.5	G	Tr	100	0	0	U	+	Y	-	N	OC	OC	TILL
04JR-TM-027	9.5	9.0	1.2	7.8	P	20	80	Tr	0	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-TM-028	7.5	7.0	0.6	6.4	G	Tr	100	0	0	U	Y	Y	Y	N	DOC	DOC	TILL
04JR-TM-029	8.6	8.1	2.9	5.2	P	25	5	70	0	S	MC	-	N	N	OC	NA	SAND & GRAVEL
04JR-TM-030	9.8	9.3	1.8	7.5	P	100	Tr	Tr	0	U	+	Y	-	N	GY	GB	TILL
04JR-TM-031	9.4	8.9	0.7	8.2	G	20	80	0	0	U	+	Y	-	N	OC	OC	TILL
04JR-TM-032	10.0	9.5	0.8	8.7	G	5	95	0	0	U	Y	Y	Y	N	OC	OC	TILL
04JR-TM-033	9.3	8.8	5.0	3.8	P	30	70	0	0	S	MC	N	N	N	OC	NA	SAND & GRAVEL
04JR-TM-034	9.3	8.8	0.8	8.0	G	10	90	0	0	S	FM	-	N	N	OC	NA	SAND
04JR-TM-035	8.5	8.0	1.2	6.8	P	10	90	Tr	0	S	FMC	-	N	N	OC	NA	SAND & GRAVEL
04JR-TM-036	9.2	8.7	1.7	7.0	G	20	80	0	0	S	MC	-	N	N	OC	NA	SAND & GRAVEL
04JR-TM-037	7.5	7.0	2.0	5.0	G	5	5	90	0	S	MC	-	N	N	GY	NA	SAND & GRAVEL

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-TM-038	9.2	8.7	1.6	7.1	P	Tr	10	90	0	U	+	Y	-	N	BN	BN	TILL
04JR-TM-039	8.2	7.7	0.9	6.8	G	Tr	100	0	0	U	+	Y	-	N	OC	OC	TILL
04JR-TM-040	8.4	7.9	0.9	7.0	G	0	100	0	0	U	+	Y	-	N	MOC	MOC	TILL
04JR-TM-041	9.8	9.3	1.2	8.1	G	5	95	0	0	S	MC	-	N	N	DOC	NA	SAND & GRAVEL
04JR-TM-042	8.1	7.6	0.8	6.8	G	10	90	0	0	S	MC	N	N	N	DOC	NA	SAND
04JR-TM-043	9.8	9.3	1.0	8.3	G	Tr	100	0	0	U	+	Y	-	N	MOC	MOC	TILL
04JR-TM-044	10.1	9.6	0.5	9.1	G	Tr	50	0	50	S	FM	-	-	Y	MOC	BN	SAND + MUCK
04JR-TM-045	7.1	6.6	0.9	5.7	G	0	100	0	0	U	+	Y	-	N	DOC	DOC	TILL
04JR-TM-046	10.1	9.6	0.6	9.0	G	0	100	0	0	U	+	Y	-	N	DOC	DOC	TILL
04JR-TM-047	9.2	8.7	0.1	8.6	G	0	20	0	80	U	+	-	N	N	LGY	NA	MILLED ROCK
04JR-TM-048	11.7	11.2	2.8	8.4	G	0	0	0	100	U	+	-	N	N	GN	NA	MILLED ROCK
04JR-TM-049	12.0	11.5	1.3	10.2	G	0	10	0	90	U	+	Y	-	N	GB	BE	TILL
04JR-TM-050	9.5	9.0	1.6	7.4	G	0	0	0	100	U	+	Y	-	N	LOC	LOC	MILLED ROCK
04JR-TM-051	9.4	8.9	0.8	8.1	G	0	100	0	0	S	MC	N	N	N	LOC	NA	SAND
04JR-TM-052	10.3	9.8	1.3	8.5	G	0	100	0	0	S	MC	-	N	N	DOC	NA	SAND & GRAVEL
04JR-TM-053	10.9	10.4	0.8	9.6	G	0	0	0	100	S	MC	-	N	N	BE	NA	MILLED ROCK
04JR-TM-054	9.7	9.2	1.7	7.5	G	Tr	100	0	0	S	MC	N	N	N	MOC	NA	SAND & GRAVEL
04JR-TM-055	11.1	10.6	1.0	9.6	G	0	100	0	0	S	MC	N	N	N	MOC	NA	SAND & GRAVEL
04JR-TM-056	10.6	10.1	0.5	9.6	G	5	95	0	0	U	+	-	-	N	MOC	NA	TILL
04JR-TM-057	11.1	10.6	1.1	9.5	G	Tr	100	0	0	U	+	-	N	N	LOC	NA	SANDY TILL
04JR-TM-058	9.6	9.1	0.8	8.3	G	0	100	0	0	U	Y	Y	Y	N	DOC	DOC	TILL
04JR-TM-059	9.4	8.9	0.5	8.4	G	5	95	0	0	U	+	Y	-	N	DOC	DOC	TILL
04JR-TM-060	9.3	8.8	0.5	8.3	G	5	95	0	0	U	Y	Y	Y	N	DOC	DOC	TILL
04JR-TM-061	9.3	8.8	3.3	5.5	G	90	10	0	0	U	Y	Y	Y	N	DOC	DOC	TILL
04JR-TM-062	9.5	9.1	1.4	7.7	G	15	85	0	0	U	-	+	Y	N	DOC	DOC	TILL
04JR-TM-063	9.7	9.2	0.6	8.6	G	5	95	0	0	U	Y	Y	Y	N	MOC	MOC	TILL
04JR-TM-064	11.7	11.2	2.8	8.4	G	Tr	100	0	0	U	+	Y	-	N	LOC	LOC	TILL
04JR-TM-065	12.9	12.4	2.1	10.3	G	0	100	0	0	S	MC	-	N	N	LOC	NA	SAND & GRAVEL
04JR-TM-066	10.0	9.5	0.4	9.1	G	0	100	0	0	U	+	Y	-	N	DOC	DOC	TILL
04JR-TM-067	10.6	10.1	0.9	9.2	G	20	80	0	0	S	FMC	-	N	N	LOC	NA	SAND
04JR-TM-068	10.0	9.5	0.3	9.2	G	5	95	0	0	S	F	+	N	N	LOC	NA	SAND + SILT
04JR-TM-069	11.5	11.0	0.1	10.9	G	0	100	0	0	S	F	N	N	N	BE	NA	SAND
04JR-TM-070	10.1	9.6	0.3	9.3	G	0	100	0	0	S	FM	+	N	N	DOC	NA	SAND + SILT

	Weight (kg)				Clasts >2.0 mm					Matrix <2.0 mm							
						Percentage				Distribution					Colour		
Sample Number	Bulk Rec'd	Table Split	+2 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	Org	Sand	Clay	Class
04JR-TM-071	7.5	7.0	0.1	6.9	G	Tr	100	0	0	S	F	+	N	N	DOC	NA	SAND + SILT
04JR-TM-072	9.7	9.2	2.3	6.9	G	70	30	0	0	U	Y	Y	Y	N	DOC	DOC	TILL
04JR-TM-073	9.8	9.3	1.2	8.1	G	Tr	100	0	0	U	+	Y	-	N	LOC	LOC	TILL
04JR-TM-074	9.8	9.3	0.4	8.9	G	Tr	100	0	0	U	Y	+	-	N	DOC	DOC	TILL
04JR-SG-001	8.7	8.1	0.3	7.8	G	0	0	0	100	S	FMC	-	N	N	PK	NA	RUBBLE
04JR-SG-002	8.8	8.2	0	8.2	G	0	100	0	0	S	F	-	N	N	LOC	NA	SAND
04JR-SG-003	10	9.5	0.4	9.1	G	0	80	0	20	S	MC	-	N	N	BE	NA	SAND
04JR-SG-004	10.6	10	2.3	7.7	G	Tr	80	0	20	S	MC	-	N	N	LOC	NA	SAND & GRAVEL
04JR-SG-005	9.5	9.1	0.2	8.9	G	Tr	40	0	60	S	F	+	N	N	LOC	NA	SAND + SILT
04JR-SG-006	12.3	11.7	7.2	4.5	G	Tr	5	0	95	S	C	N	N	N	BE	NA	SAND & GRAVEL
04JR-SG-007	9.1	8.5	5.2	3.3	G	Tr	100	0	Tr	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-SG-008	10.1	9.6	3	6.6	G	Tr	95	0	5	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-SG-009	9.2	8.6	0	8.6	No Clasts					S	F	N	N	N	MOC	NA	SAND
04JR-SG-010	11.7	11.1	1.7	9.4	G	Tr	100	0	0	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-SG-011	8.9	8.3	0.2	8.1	G	0	95	0	5	S	MC	N	N	N	LOC	NA	SAND
04JR-SG-012	11.5	11.1	0.6	10.5	G	Tr	100	0	0	S	MC	N	N	N	LOC	NA	SAND
04JR-SG-013	7.4	6.7	0	6.7	No Clasts					S	M	N	N	N	LOC	NA	SAND
04JR-SG-014	7.9	7.5	1.4	6.1	G	Tr	100	0	0	S	MC	N	N	N	LOC	NA	SAND & GRAVEL
04JR-SG-015	8.7	8.7	0.2	8.5	G	Tr	80	0	20	S	MC	N	N	N	LOC	NA	SAND

*Clasts listed as "other" are beige and green Paleozoic sandstone and limestone.

Appendix 3

Summary of Kimberlite Indicator Mineral Counts

Abbreviations:

CR	Chromite
DC	Chromian diopside
Diop	Diopside
(e)	amount of grains estimated to be in sample
FO	Forsteritic olivine
GO	Eclogitic garnet
GP	Pyrope garnet
IM	Ilmenite
KIM	Kimberlite indicator minerals
(p)	amount of grains picked from sample

Shaded samples are ones identified as having heavy mineral/metal contamination.

Sample Number	Selected PseudoKIMs			KIM Count																				
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm								Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-MA-001	0	47	23(125)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-002	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-003	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-004	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-006	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-007	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-009	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	80	80
JR-MA-010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-012	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-013	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-016	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-018	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-020	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-021	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-022	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-023	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-024	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
JR-MA-025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-026	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-027	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-028	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
JR-MA-032	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-034	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-035/038**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-036	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Number	Selected PseudoKIMs			KIM Count																			
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm							Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-MA-037	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-038	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-041	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-042	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-044	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-045	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-046	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-047	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-048	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-050	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
JR-MA-051	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-053	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-054	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-056	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-057	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-058	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-059	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-060	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-061	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-062	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-063	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-064	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-065	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-066	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-067	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-068	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-069	0	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-070	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-071	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-072	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-073	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Number	Selected PseudoKIMs			KIM Count																			
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm								Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-MA-074	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-075	No Sample	0	4	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-076	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-077	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
JR-MA-078	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-079	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-080	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-081	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-082	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-083	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-084	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-085	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-086	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-087	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-088	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-089	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-090	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-091	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-092	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-093	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-094	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-095	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-096	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-097	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-098	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-099	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-101	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-102	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-103	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-104	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-106	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-107	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-108	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-109	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-110	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Number	Selected PseudoKIMs			KIM Count																				
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm								Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-MA-111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-112	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-114	0	1	8	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	27	80	0	0	85
JR-MA-115	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-116	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-117	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-119	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
JR-MA-120	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-122	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-123	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-126	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-127	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-128	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-130	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-131	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-133	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-134	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-135	No Sample	0	2	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-136	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-137	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-138	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-140	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-141	0	1	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-142	0	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-143	0	1	13	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
JR-MA-144	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-145	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Number	Selected PseudoKIMs			KIM Count																				
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm								Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-MA-148	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
JR-MA-149	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-150	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-160	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-161	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-001	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-003	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-005	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-011	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-012	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-015	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-016	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-018	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-019	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-023	0	5	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Number	Selected PseudoKIMs			KIM Count																			
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm								Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-TM-024	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-025	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-026	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-027	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-029	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-032	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-034	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-035	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-037	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-038	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-039	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-040	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-041	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-042	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-043	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-044	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-045	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-046	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-047	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-048	No Sample	No Sample	0	No Sample						No Sample						0	0	0	0	0	0	0	0	0
JR-TM-049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-050	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-051	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-053	No Sample	No Sample	0	No Sample						No Sample						0	0	0	0	0	0	0	0	0
JR-TM-054	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
JR-TM-056	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-057	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-058	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-059	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-060	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Sample Number	Selected PseudoKIMs			KIM Count																				
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm								Total KIMs
	Low-Cr diopside	Low-Cr diopside	Low-Cr diopside	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR (p)	CR (e)	FO (p)	FO (e)	
JR-TM-061	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-062	No Sample	0	0	No Sample						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-063	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
JR-TM-064	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-065	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-066	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-067	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-068	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-070	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-071	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-072	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-073	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-TM-074	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-001	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-003	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-004	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-005	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-007	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-008	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-009	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
JR-SG-010	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-011	1	11	30(60)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	4
JR-SG-012	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-013	0	3	26(40)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-014	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-SG-015	0	10	30(80)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Numbers in brackets are estimated total indicator grains present in samples where not all of the grains were picked.

** Accidentally combined the heavy minerals from disqualified "muck" sample No. 038 with the heavy minerals from Sample No. 035.
Approximately 21 g of 186.8 grams of -0.25 mm and 0.04 g of 3.3 grams of +0.25 mm HMC are from the "muck" sample. A replacement sample was collected for No. 038.

Appendix 4

Kimberlite Indicator Mineral Picking Remarks

Abbreviations:

CR	Chromite
DC	Chromian diopside
FO	Forsteritic olivine
GO	Eclogitic garnet
GP	Pyrope garnet
IM	Ilmenite
KIM	Kimberlite indicator minerals
SEM	Scanning electron microscope

Shaded samples are ones identified as having heavy mineral/metal contamination.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-MA-001	No KIM remarks.
04JR-MA-002	SEM checks from 0.25-0.5 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite; and 2 CR versus tourmaline candidates = 1 tourmaline and 1 almandine.
04JR-MA-003	No KIM remarks.
04JR-MA-004	SEM check from 0.25-0.5 mm fraction: 1 CR versus rutile candidate = 1 crustal ilmenite.
04JR-MA-005	SEM checks from 0.25-0.5 mm fraction: 2 IM versus crustal ilmenite candidates = 2 crustal ilmenite.
04JR-MA-006	No KIM remarks.
04JR-MA-007	SEM check from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite.
04JR-MA-008	SEM checks from 0.5-1.0 mm fraction: 10 IM versus crustal ilmenite candidate = 3 crustal ilmenite, 6 rutile and 1 tourmaline; and 1 FO versus diopside candidate = 1 diopside. SEM checks from 0.25-0.5 mm fraction: 5 IM versus crustal ilmenite candidates = 5 crustal ilmenite.
04JR-MA-009	SEM checks from 0.25-0.5 mm fraction: 5 FO versus fayalite candidates = 5 FO.
04JR-MA-010	No KIM remarks.
04JR-MA-011	No KIM remarks.
04JR-MA-012	No KIM remarks.
04JR-MA-013	No KIM remarks.
04JR-MA-014	No KIM remarks.
04JR-MA-015	No KIM remarks.
04JR-MA-016	No KIM remarks.
04JR-MA-017	SEM checks from 0.25-0.5 mm fraction: 2 CR versus rutile candidates = 2 crustal ilmenite.
04JR-MA-018	No KIM remarks.
04JR-MA-019	No KIM remarks.
04JR-MA-020	No KIM remarks.
04JR-MA-021	No KIM remarks.
04JR-MA-022	No KIM remarks.
04JR-MA-023	No KIM remarks.
04JR-MA-024	SEM check from 0.25-0.5 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite.
04JR-MA-025	No KIM remarks.
04JR-MA-026	SEM check from 0.25-0.5 mm fraction: 1 FO versus diopside candidate = 1 diopside.
04JR-MA-027	No KIM remarks.
04JR-MA-028	No KIM remarks.
04JR-MA-029	No KIM remarks.
04JR-MA-030	SEM check from 0.25-0.5 mm fraction: 1 CR versus hercynite candidate = 1 spinel.
04JR-MA-031	No KIM remarks.
04JR-MA-032	No KIM remarks.
04JR-MA-033	No KIM remarks.
04JR-MA-034	No KIM remarks.
04JR-MA-035	No KIM remarks.
04JR-MA-036	No KIM remarks.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-MA-037	No KIM remarks.
04JR-MA-038	No KIM remarks.
04JR-MA-039	No KIM remarks.
04JR-MA-040	No KIM remarks.
04JR-MA-041	No KIM remarks.
04JR-MA-042	No KIM remarks.
04JR-MA-043	No KIM remarks.
04JR-MA-044	No KIM remarks.
04JR-MA-045	No KIM remarks.
04JR-MA-046	No KIM remarks.
04JR-MA-047	No KIM remarks.
04JR-MA-048	No KIM remarks.
04JR-MA-049	No KIM remarks.
04JR-MA-050	No KIM remarks.
04JR-MA-051	No KIM remarks.
04JR-MA-052	No KIM remarks.
04JR-MA-053	No KIM remarks.
04JR-MA-054	No KIM remarks.
04JR-MA-055	No KIM remarks.
04JR-MA-056	No KIM remarks.
04JR-MA-057	No KIM remarks.
04JR-MA-058	No KIM remarks.
04JR-MA-059	No KIM remarks.
04JR-MA-060	No KIM remarks.
04JR-MA-061	No KIM remarks.
04JR-MA-062	SEM check from 0.25-0.5 mm fraction: 1 CR versus hercynite candidate = 1 hercynite.
04JR-MA-063	No KIM remarks.
04JR-MA-064	No KIM remarks.
04JR-MA-065	No KIM remarks.
04JR-MA-066	No KIM remarks.
04JR-MA-067	No KIM remarks.
04JR-MA-068	No KIM remarks.
04JR-MA-069	No KIM remarks.
04JR-MA-070	No KIM remarks.
04JR-MA-071	No KIM remarks.
04JR-MA-072	No KIM remarks.
04JR-MA-073	No KIM remarks.
04JR-MA-074	No KIM remarks.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-MA-075	No KIM remarks.
04JR-MA-076	No KIM remarks.
04JR-MA-077	SEM checks from 0.5-1.0 mm fraction: 3 IM versus crustal ilmenite candidates = 3 crustal ilmenite; and 1 FO versus diopside candidate = 1 diopside. SEM checks from 0.25-0.5 mm fraction: 5 GO versus almandine candidates = 4 almandine and 1 grossular. Sole GP from 0.25-0.5 mm fraction has chiselled edges indicating long transport.
04JR-MA-078	No KIM remarks.
04JR-MA-079	No KIM remarks.
04JR-MA-080	No KIM remarks.
04JR-MA-081	No KIM remarks.
04JR-MA-082	No KIM remarks.
04JR-MA-083	No KIM remarks.
04JR-MA-084	No KIM remarks.
04JR-MA-085	No KIM remarks.
04JR-MA-086	No KIM remarks.
04JR-MA-087	No KIM remarks.
04JR-MA-088	No KIM remarks.
04JR-MA-089	No KIM remarks.
04JR-MA-090	No KIM remarks.
04JR-MA-091	No KIM remarks.
04JR-MA-092	No KIM remarks.
04JR-MA-093	No KIM remarks.
04JR-MA-094	No KIM remarks.
04JR-MA-095	No KIM remarks.
04JR-MA-096	No KIM remarks.
04JR-MA-097	No KIM remarks.
04JR-MA-098	No KIM remarks.
04JR-MA-099	No KIM remarks.
04JR-MA-100	SEM check from 0.25-0.5 mm fraction: 1 FO candidate = 1 tremolite.
04JR-MA-101	No KIM remarks.
04JR-MA-102	No KIM remarks.
04JR-MA-103	No KIM remarks.
04JR-MA-104	No KIM remarks.
04JR-MA-105	No KIM remarks.
04JR-MA-106	No KIM remarks.
04JR-MA-107	SEM check from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite.
04JR-MA-108	No KIM remarks.
04JR-MA-109	No KIM remarks.
04JR-MA-110	No KIM remarks.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-MA-111	No KIM remarks.
04JR-MA-112	No KIM remarks.
04JR-MA-113	No KIM remarks.
04JR-MA-114	SEM checks from 0.5-1.0 mm fraction: 7 CR versus crustal ilmenite candidates = 5 CR and 2 crustal ilmenite.
04JR-MA-115	No KIM remarks.
04JR-MA-116	No KIM remarks.
04JR-MA-117	No KIM remarks.
04JR-MA-118	No KIM remarks.
04JR-MA-119	No KIM remarks.
04JR-MA-120	No KIM remarks.
04JR-MA-121	No KIM remarks.
04JR-MA-122	No KIM remarks.
04JR-MA-123	No KIM remarks.
04JR-MA-124	No KIM remarks.
04JR-MA-125	SEM check from 0.25-0.5 mm fraction: 3 CR versus rutile candidates = 1 geikielite (MgTiO3) and 2 crustal ilmenite.
04JR-MA-126	No KIM remarks.
04JR-MA-127	No KIM remarks.
04JR-MA-128	No KIM remarks.
04JR-MA-129	SEM checks from 0.25-0.5 mm fraction: 1 CR versus geikielite candidate = 1 crustal ilmenite.
04JR-MA-130	SEM checks from 0.5-1.0 mm fraction: 2 FO versus diopside candidates = 2 diopside. SEM check from 0.25-0.5 mm fraction: 1 FO versus diopside candidate = 1 diopside.
04JR-MA-131	No KIM remarks.
04JR-MA-132	SEM check from 0.5-1.0 mm fraction: 1 FO versus diopside candidate = 1 diopside.
04JR-MA-133	No KIM remarks.
04JR-MA-134	No KIM remarks.
04JR-MA-135	No KIM remarks.
04JR-MA-136	No KIM remarks.
04JR-MA-137	No KIM remarks.
04JR-MA-138	No KIM remarks.
04JR-MA-139	No KIM remarks.
04JR-MA-140	SEM checks from 0.5-1.0 mm fraction: 5 IM versus crustal ilmenite candidates = 5 crustal ilmenite.
04JR-MA-141	No KIM remarks.
04JR-MA-142	No KIM remarks.
04JR-MA-143	SEM checks from 0.25-0.5 mm fraction: 1 GP versus zircon candidate = 1 GP; and 1 FO versus diopside candidate = 1 diopside.
04JR-MA-144	No KIM remarks.
04JR-MA-145	No KIM remarks.
04JR-MA-146	No KIM remarks.
04JR-MA-147	SEM check from 0.25-0.5 mm fraction: 1 pink GP versus zircon candidate = 1 spinel.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-MA-148	SEM checks from 0.5-1.0 mm fraction: 1 GO versus almandine candidate = 1 almandine; and 1 CR versus andradite candidate = 1 CR (trace Zn).
04JR-MA-149	SEM check from 0.25-0.5 mm fraction: 1 FO versus diopside candidate = 1 diopside.
04JR-MA-150	No KIM remarks.
04JR-MA-151	No KIM remarks.
04JR-MA-152	No KIM remarks.
04JR-MA-153	No KIM remarks.
04JR-MA-154	SEM check from 0.25-0.5 mm fraction: 1 FO versus diopside candidate = 1 diopside.
04JR-MA-155	No KIM remarks.
04JR-MA-156	No KIM remarks.
04JR-MA-157	No KIM remarks.
04JR-MA-158	No KIM remarks.
04JR-MA-159	No KIM remarks.
04JR-MA-160	No KIM remarks.
04JR-MA-161	No KIM remarks.
04JR-TM-001	No KIM remarks.
04JR-TM-002	No KIM remarks.
04JR-TM-003	No KIM remarks.
04JR-TM-004	No KIM remarks.
04JR-TM-005	No KIM remarks.
04JR-TM-006	No KIM remarks.
04JR-TM-007	No KIM remarks.
04JR-TM-008	No KIM remarks.
04JR-TM-009	No KIM remarks.
04JR-TM-010	No KIM remarks.
04JR-TM-011	No KIM remarks.
04JR-TM-012	No KIM remarks.
04JR-TM-013	No KIM remarks.
04JR-TM-014	No KIM remarks.
04JR-TM-015	No KIM remarks.
04JR-TM-016	No KIM remarks.
04JR-TM-017	No KIM remarks.
04JR-TM-018	No KIM remarks.
04JR-TM-019	No KIM remarks.
04JR-TM-020	No KIM remarks.
04JR-TM-021	No KIM remarks.
04JR-TM-022	No KIM remarks.
04JR-TM-023	No KIM remarks.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-TM-024	No KIM remarks.
04JR-TM-025	No KIM remarks.
04JR-TM-026	No KIM remarks.
04JR-TM-027	No KIM remarks.
04JR-TM-028	No KIM remarks.
04JR-TM-029	SEM checks from 0.25-0.5 mm fraction: 1 GO versus grossular candidate = 1 grossular; and 1 CR versus crustal ilmenite candidate = 1 crustal ilmenite.
04JR-TM-030	No KIM remarks.
04JR-TM-031	No KIM remarks.
04JR-TM-032	No KIM remarks.
04JR-TM-033	No KIM remarks.
04JR-TM-034	No KIM remarks.
04JR-TM-035	No KIM remarks.
04JR-TM-036	No KIM remarks.
04JR-TM-037	No KIM remarks.
04JR-TM-038	No KIM remarks.
04JR-TM-039	No KIM remarks.
04JR-TM-040	No KIM remarks.
04JR-TM-041	No KIM remarks.
04JR-TM-042	No KIM remarks.
04JR-TM-043	No KIM remarks.
04JR-TM-045	No KIM remarks.
04JR-TM-046	SEM checks from 0.25-0.5 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite; and 1 CR versus crustal ilmenite candidate = 1 crustal ilmenite.
04JR-TM-047	No KIM remarks.
04JR-TM-048	No KIM remarks.
04JR-TM-049	No KIM remarks.
04JR-TM-050	No KIM remarks.
04JR-TM-051	No KIM remarks.
04JR-TM-052	No KIM remarks.
04JR-TM-053	No KIM remarks.
04JR-TM-054	No KIM remarks.
04JR-TM-055	SEM check from 0.25-0.5 mm fraction: 1 pale pink GP versus almandine candidate = 1 GP. Sole GP from 0.25-0.5 mm fraction has chiselled edges indicating long transport.
04JR-TM-056	No KIM remarks.
04JR-TM-057	No KIM remarks.
04JR-TM-058	No KIM remarks.
04JR-TM-059	No KIM remarks.

SAMPLE NO.	OVERBURDEN DRILLING MANAGEMENT REMARKS
04JR-TM-060	No KIM remarks.
04JR-TM-061	No KIM remarks.
04JR-TM-062	No KIM remarks.
04JR-TM-063	No KIM remarks.
04JR-TM-064	SEM checks from 0.25-0.5 mm fraction: 4 GO versus chondrodite candidates = 4 grossular.
04JR-TM-065	No KIM remarks.
04JR-TM-066	No KIM remarks.
04JR-TM-067	SEM checks from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite; and 6 FO versus diopside candidates = 3 diopside, 2 corundum and 1 apatite.
04JR-TM-068	No KIM remarks.
04JR-TM-069	No KIM remarks.
04JR-TM-070	No KIM remarks.
04JR-TM-071	No KIM remarks.
04JR-TM-072	No KIM remarks.
04JR-TM-073	No KIM remarks.
04JR-TM-074	No KIM remarks.
04JR-SG-001	No KIM remarks.
04JR-SG-002	No KIM remarks.
04JR-SG-003	No KIM remarks.
04JR-SG-004	No KIM remarks.
04JR-SG-005	No KIM remarks.
04JR-SG-006	No KIM remarks.
04JR-SG-007	No KIM remarks.
04JR-SG-008	No KIM remarks.
04JR-SG-009	SEM checks from 0.25-0.5 mm fraction: 1 GO versus grossular candidate = 1 staurolite; and 1 CR versus crustal ilmenite candidate = 1 crustal ilmenite. Sole GP from 0.25-0.5 mm fraction has well-chiseled edges indicating long transport.
04JR-SG-010	No KIM remarks.
04JR-SG-011	SEM checks from 0.25-0.5 mm fraction: 4 pink GP versus ruby corundum candidates = 4 Cr-spinel. Sole GP from 0.25-0.5 mm fraction has well-chiseled edges indicating long transport.
04JR-SG-012	No KIM remarks.
04JR-SG-013	No KIM remarks.
04JR-SG-014	No KIM remarks.
04JR-SG-015	No KIM remarks.

Appendix 5

Summary of Microprobe Data for Indicator Minerals

Abbreviations:

Al	Aluminum
Ca	Calcium
Cr	Chromium
Fe	Iron
K	Potassium
Mg	Magnesium
Mn	Manganese
Na	Sodium
Nb	Niobium
Ni	Nickel
O	Oxygen
Si	Silicon
Ti	Titanium
V	Vanadium
Zn	Zinc

Shaded samples are ones identified as having heavy mineral/metal contamination.

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	Total
GARNETS											
Cr-pyrope											
04JR-MA-077-001	41.775	0.566	19.425	4.280	20.771	5.719	0.278	7.347	0.025	0.000	100.186
04JR-MA-143-001	41.723	0.474	19.497	4.876	20.137	5.697	0.317	6.793	0.046	0.003	99.562
04JR-SG-009-001	41.356	0.291	19.866	4.833	20.624	5.209	0.320	6.860	0.048	0.000	99.407
04JR-TM-055-001	41.636	0.062	22.130	1.946	20.069	4.526	0.414	8.951	0.008	0.000	99.740
Almandine and Spessartine											
04JR-MA-008-001	38.014	0.088	20.686	0.013	3.174	8.751	2.025	27.590	0.000	0.000	100.342
04JR-MA-008-002	38.405	0.057	20.897	0.009	4.863	9.701	0.484	25.634	0.010	0.004	100.064
04JR-MA-008-003	37.225	0.057	20.552	0.006	1.793	7.205	1.073	32.305	0.001	0.005	100.222
04JR-MA-008-004	36.903	0.038	20.117	0.000	0.725	8.164	2.113	31.667	0.001	0.000	99.726
04JR-MA-008-005	38.243	0.079	20.500	0.011	3.487	9.837	2.377	25.841	0.000	0.000	100.374
04JR-MA-013-001	37.707	0.013	20.332	0.009	6.154	6.445	0.852	27.426	0.000	0.004	98.942
04JR-MA-013-002	38.881	0.082	21.078	0.009	6.612	10.273	0.936	22.133	0.000	0.001	100.004
04JR-MA-013-003	37.479	0.027	20.702	0.000	2.782	9.149	1.347	28.322	0.000	0.001	99.808
04JR-MA-013-004	37.270	0.031	20.130	0.000	2.091	6.672	3.666	30.019	0.001	0.000	99.880
04JR-MA-013-005	38.660	0.088	20.986	0.002	4.830	10.583	2.041	23.188	0.000	0.000	100.377
04JR-MA-077-002	39.794	0.262	21.842	0.040	8.844	11.288	0.381	17.859	0.011	0.000	100.321
04JR-MA-077-003	37.978	0.315	20.771	0.030	2.018	13.726	1.855	23.339	0.000	0.000	100.032
04JR-MA-077-004	38.696	0.133	21.327	0.000	4.023	12.150	0.596	23.605	0.000	0.000	100.529
04JR-MA-088-001	36.960	0.050	20.431	0.000	1.951	6.148	2.494	32.094	0.001	0.000	100.128
04JR-MA-088-002	36.530	0.002	19.511	0.000	0.893	5.645	14.603	21.681	0.043	0.000	98.908
04JR-MA-088-003	37.674	0.038	20.536	0.007	1.087	12.678	5.326	22.984	0.000	0.000	100.331
04JR-MA-088-004	37.632	0.061	20.729	0.003	2.387	7.111	0.802	31.697	0.000	0.000	100.423
04JR-MA-088-005	37.294	0.016	20.662	0.008	1.879	7.204	1.001	32.111	0.001	0.003	100.179
04JR-MA-114-001	39.785	0.067	22.028	0.000	9.118	10.707	0.410	18.276	0.000	0.000	100.392
04JR-MA-123-001	37.780	0.020	21.154	0.041	6.492	1.218	0.179	33.029	0.000	0.003	99.916
04JR-MA-123-002	37.134	0.020	20.882	0.018	4.270	1.236	0.813	35.494	0.001	0.002	99.868
04JR-MA-136-001	37.079	0.188	20.430	0.013	0.358	11.235	9.419	20.889	0.005	0.000	99.615
04JR-MA-136-002	37.542	0.078	20.944	0.000	0.371	11.019	9.105	21.484	0.000	0.000	100.543
04JR-MA-136-003	37.500	0.152	20.551	0.004	0.351	11.600	12.485	17.419	0.000	0.000	100.062
04JR-MA-136-004	37.538	0.129	20.868	0.000	0.709	9.270	9.443	22.850	0.012	0.000	100.817
04JR-MA-148-001	39.144	0.023	21.642	0.013	8.427	6.023	0.901	24.418	0.000	0.000	100.591
04JR-MA-159-001	37.536	0.151	20.428	0.073	0.820	13.249	8.977	18.740	0.003	0.000	99.974
04JR-MA-159-003	36.063	0.027	20.000	0.003	0.869	1.600	23.114	17.865	0.015	0.000	99.557
04JR-TM-022-001	37.174	0.060	20.636	0.009	2.347	6.534	0.958	32.795	0.001	0.000	100.514
04JR-TM-022-002	35.858	0.089	19.900	0.000	0.745	1.688	16.441	24.515	0.001	0.000	99.237
04JR-TM-022-003	37.289	0.016	20.598	0.000	3.082	5.677	10.009	23.362	0.008	0.000	100.041

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	Total
04JR-TM-022-004	36.992	0.018	20.448	0.000	1.525	7.086	1.499	32.498	0.001	0.000	100.066
04JR-TM-022-005	35.838	0.045	19.850	0.000	0.657	0.413	17.248	25.978	0.001	0.000	100.031
04JR-TM-067-001	38.874	0.006	21.887	0.063	10.855	1.403	0.399	26.377	0.000	0.000	99.864
Grossular											
04JR-MA-002-002	38.1577	0.6549	15.1147	0.0074	0.0686	34.458	0.4869	10.0212	0.0004	0.0026	98.9724
04JR-MA-002-003	37.551	0.520	13.064	0.000	0.093	33.179	0.856	13.313	0.000	0.000	98.577
04JR-MA-002-004	37.968	0.613	13.032	0.002	0.191	33.444	0.461	13.493	0.003	0.000	99.206
04JR-MA-002-005	38.338	0.439	13.898	0.012	0.212	34.434	0.318	11.357	0.000	0.002	99.010
04JR-MA-002-006	37.861	0.415	13.330	0.006	0.288	33.826	0.482	12.632	0.000	0.000	98.839
04JR-MA-012-003	38.084	0.530	12.270	0.000	0.160	34.470	0.413	12.726	0.000	0.000	98.654
04JR-MA-077-005	38.338	0.181	19.760	0.023	0.133	29.149	0.415	11.257	0.000	0.000	99.256
04JR-MA-113-001	37.174	0.083	16.804	0.000	0.024	35.204	0.428	9.234	0.000	0.000	98.952
04JR-MA-113-002	37.974	0.623	15.312	0.013	0.058	35.098	0.306	10.758	0.000	0.000	100.143
04JR-MA-113-003	38.037	0.677	15.128	0.000	0.065	35.087	0.467	10.240	0.000	0.000	99.701
04JR-MA-113-004	37.530	0.346	10.389	0.002	0.022	34.061	0.629	16.200	0.002	0.000	99.180
04JR-MA-113-005	38.015	0.931	14.382	0.000	0.332	34.810	0.172	11.152	0.002	0.007	99.805
04JR-MA-159-002	39.495	0.244	21.015	0.000	0.452	30.689	0.239	7.990	0.005	0.004	100.134
04JR-TM-029-001	39.074	0.569	19.592	0.000	0.111	34.308	0.169	5.752	0.000	0.000	99.575
04JR-TM-064-001	38.562	0.426	16.183	0.000	0.241	33.477	0.767	9.572	0.000	0.000	99.227
04JR-TM-064-002	38.112	0.328	18.122	0.005	0.366	29.452	1.583	11.049	0.004	0.000	99.022
04JR-TM-064-003	39.146	0.255	19.994	0.000	0.054	32.512	0.742	6.969	0.001	0.000	99.673
04JR-TM-064-004	37.924	0.945	16.089	0.059	0.272	34.733	0.173	8.493	0.013	0.000	98.702
Uvarovite Garnet?											
04JR-MA-081-001	36.986	0.248	5.676	19.911	0.376	32.731	0.489	1.814	0.003	0.000	98.233
04JR-MA-113-006	37.474	0.088	10.015	6.192	0.039	34.599	0.131	10.032	0.000	0.000	98.571
04JR-TM-055-002	37.091	0.098	7.235	13.671	0.053	34.329	0.095	6.303	0.000	0.000	98.876
Andradite?											
04JR-MA-001-001	36.453	0.040	5.950	0.010	0.000	33.831	0.379	21.107	0.000	0.001	97.771
04JR-MA-001-003	37.274	0.641	8.990	0.000	0.241	34.238	0.180	16.649	0.000	0.002	98.217
04JR-MA-012-001	37.558	0.168	9.893	0.000	0.128	34.493	0.319	15.964	0.000	0.000	98.525
04JR-MA-012-002	36.931	0.287	7.773	0.000	0.066	33.889	0.250	18.822	0.000	0.000	98.020
04JR-MA-012-004	36.732	0.188	5.159	0.011	0.041	33.387	0.208	22.334	0.002	0.004	98.065
04JR-MA-012-005	36.7462	0.144	5.4391	0.001	0.0505	33.7621	0.1607	21.4383	0.0004	0.0001	97.7424
04JR-MA-143-002	36.3058	1.0685	4.3759	0.0094	0.3018	33.4926	0.0168	22.0964	0.0004	0.0001	97.6677

Sample	SiO_2	TiO_2	Nb_2O_5	Al_2O_3	Cr_2O_3	V_2O_5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe_2O_3	FeO	Total
GAHNITES															
04JR-MA-008-006	0.001	0.116	0.005	55.240	0.062	0.000	2.110	0.565	3.727	0.021	37.103	98.951	1.226	2.624	99.073
04JR-MA-029-001	0.018	0.000	0.029	56.613	0.010	0.000	1.822	0.096	9.970	0.010	31.614	100.181	0.911	9.149	100.272
04JR-MA-029-002	0.043	0.008	0.000	57.045	0.019	0.031	3.281	0.044	11.162	0.000	28.128	99.760	1.088	10.183	99.869
04JR-MA-029-003	0.020	0.018	0.028	56.386	0.000	0.000	2.452	0.111	6.294	0.000	33.991	99.299	0.675	5.686	99.367
04JR-MA-029-004	0.016	0.000	0.029	56.863	0.003	0.000	2.591	0.240	7.982	0.015	31.974	99.712	0.676	7.373	99.780
04JR-MA-029-005	0.030	0.002	0.025	56.312	0.000	0.000	1.907	0.046	13.803	0.000	27.275	99.400	1.123	12.792	99.512
04JR-MA-029-006	0.015	0.000	0.000	55.609	0.000	0.020	0.996	0.187	6.875	0.007	36.127	99.836	1.080	5.903	99.945
04JR-MA-029-007	0.001	0.010	0.000	58.220	0.013	0.043	3.958	0.138	9.042	0.000	28.989	100.414	0.480	8.609	100.462
04JR-MA-041-001	0.028	0.000	0.003	57.051	0.000	0.000	2.831	0.293	8.459	0.000	31.578	100.243	1.035	7.528	100.347
04JR-MA-053-001	0.027	0.000	0.000	56.510	0.000	0.027	2.142	0.273	5.823	0.006	35.238	100.045	0.789	5.113	100.124
04JR-MA-070-001	0.001	0.000	0.034	56.972	0.003	0.005	2.505	0.315	9.650	0.000	30.121	99.606	0.586	9.123	99.665
04JR-MA-077-006	0.041	0.003	0.000	55.598	0.000	0.032	2.355	0.245	9.649	0.000	30.442	98.365	1.180	8.587	98.483
04JR-MA-077-007	0.018	0.006	0.000	56.999	0.004	0.042	3.000	0.118	7.022	0.005	32.433	99.645	0.579	6.501	99.703
04JR-MA-077-008	0.030	0.016	0.000	55.740	0.502	0.032	2.527	0.171	12.479	0.001	27.857	99.354	1.510	11.120	99.505
04JR-MA-077-009	0.002	0.002	0.000	57.044	0.010	0.001	3.336	0.482	6.869	0.000	31.570	99.317	0.705	6.234	99.388
04JR-MA-077-010	0.029	0.000	0.000	56.405	0.000	0.006	2.151	0.355	6.524	0.006	34.136	99.613	0.756	5.844	99.689
04JR-MA-077-011	0.001	0.000	0.039	56.572	0.017	0.085	3.581	0.081	10.167	0.005	29.025	99.572	1.532	8.788	99.726
04JR-MA-077-012	0.001	0.000	0.000	55.958	0.007	0.032	1.925	0.202	9.774	0.004	30.871	98.775	0.840	9.018	98.859
04JR-MA-077-013	0.034	0.004	0.000	55.108	0.000	0.000	1.406	0.055	8.686	0.000	33.408	98.701	1.343	7.477	98.836
04JR-MA-077-014	0.011	0.000	0.000	56.748	0.121	0.082	3.238	0.196	7.629	0.008	31.294	99.328	0.685	7.012	99.396
04JR-MA-077-015	0.013	0.004	0.027	56.446	0.000	0.041	2.796	0.128	7.643	0.003	31.995	99.096	0.755	6.964	99.172
04JR-MA-077-016	0.026	0.000	0.020	55.869	0.000	0.000	1.421	0.119	6.477	0.000	35.673	99.606	0.850	5.712	99.691
04JR-MA-077-017	0.665	0.004	0.037	56.714	0.000	0.008	2.639	0.215	10.436	0.015	29.511	100.244	0.000	10.436	100.244
04JR-MA-077-018	0.028	0.003	0.000	54.157	0.000	0.000	0.805	0.034	9.080	0.000	34.928	99.035	2.328	6.985	99.268
04JR-MA-077-019	0.001	0.000	0.037	57.172	0.000	0.021	4.127	0.103	8.725	0.009	28.956	99.150	0.986	7.837	99.249
04JR-MA-077-020	0.004	0.018	0.000	55.517	0.005	0.005	0.865	0.130	10.172	0.000	32.414	99.128	0.946	9.320	99.223
04JR-MA-077-021	0.019	0.011	0.000	56.694	0.000	0.000	2.322	0.251	8.194	0.004	31.925	99.419	0.556	7.693	99.474
04JR-MA-077-022	0.012	0.021	0.002	55.025	0.027	0.031	2.013	0.122	8.525	0.003	33.350	99.133	2.024	6.704	99.335
04JR-MA-082-001	0.008	0.003	0.025	57.715	0.000	0.048	4.322	0.229	8.033	0.000	29.043	99.425	0.540	7.546	99.479
04JR-MA-085-001	0.023	0.022	0.000	55.589	0.000	0.005	1.283	0.100	9.076	0.002	33.034	99.133	0.996	8.180	99.232
04JR-MA-088-006	0.017	0.000	0.000	55.819	0.000	0.041	1.713	0.066	7.614	0.010	34.147	99.428	1.030	6.687	99.531
04JR-MA-088-007	0.007	0.000	0.000	57.440	0.000	0.032	3.949	0.131	7.824	0.011	30.355	99.751	0.899	7.016	99.841
04JR-MA-088-008	0.026	0.014	0.015	56.732	0.000	0.016	2.063	0.231	8.553	0.000	32.034	99.684	0.446	8.152	99.728
04JR-MA-088-009	0.041	0.004	0.044	56.168	0.000	0.000	2.511	0.297	9.460	0.008	30.214	98.747	0.846	8.698	98.832
04JR-MA-101-010	0.006	0.000	0.017	61.506	0.068	0.015	10.165	0.014	8.417	0.017	19.048	99.274	0.000	8.417	99.274
04JR-MA-109-001	0.011	0.000	0.000	56.274	0.000	0.000	2.222	0.244	9.598	0.003	30.870	99.223	1.016	8.683	99.325
04JR-MA-111-001	0.001	0.000	0.000	56.652	0.008	0.000	2.683	0.338	8.700	0.008	31.468	99.857	1.243	7.581	99.982
04JR-MA-111-002	0.027	0.010	0.007	56.968	0.002	0.000	3.805	0.204	6.688	0.000	31.919	99.631	1.192	5.616	99.751
04JR-MA-113-007	0.001	0.000	0.010	55.668	0.029	0.035	1.221	0.374	5.234	0.000	37.740	100.311	1.291	4.072	100.440
04JR-MA-123-025	0.034	0.003	0.017	60.335	0.000	0.035	10.164	0.225	10.457	0.000	18.600	99.869	1.835	8.805	100.053
04JR-MA-123-026	0.029	0.020	0.007	55.693	0.008	0.000	1.986	1.458	15.438	0.008	25.302	99.949	2.538	13.154	100.203
04JR-MA-130-001	0.015	0.018	0.032	56.452	0.100	0.027	2.262	0.152	7.343	0.000	33.399	99.800	0.725	6.690	99.872
04JR-MA-147-001	0.001	0.003	0.000	56.897	0.010	0.000	0.871	0.434	11.359	0.001	30.717	100.293	0.263	11.122	100.320
04JR-MA-150-001	0.001	0.002	0.022	55.960	0.000	0.000	1.297	0.217	7.956	0.002	34.952	100.408	1.377	6.717	100.546
04JR-MA-150-002	0.010	0.032	0.027	55.830	0.000	0.006	1.263	0.056	12.079	0.005	30.937	100.245	1.635	10.608	100.409
04JR-MA-150-003	0.001	0.004	0.010	55.552	0.000	0.001	0.744	0.057	8.599	0.001	34.887	99.856	1.186	7.532	99.975
04JR-MA-150-004	0.013	0.000	0.051	58.465	0.011	0.029	3.263	0.381	7.702	0.008	31.010	100.933	0.000	7.702	100.933
04JR-MA-150-005	0.001	0.006	0.000	57.781	0.000	0.027	2.402	0.224	9.552	0.002	30.649	100.643	0.229	9.346	100.666
04JR-MA-150-006	0.017	0.005	0.066	57.191	0.010	0.019	3.184	0.117	10.110	0.000	29.763	100.479	1.217	9.015	100.601
04JR-MA-150-007	0.020	0.001	0.000	56.984	0.000	0.000	2.369	0.279	9.293	0.000	31.046	99.993	0.737	8.631	100.066
04JR-MA-150-008	0.028	0.009	0.000	56.329	0.000	0.017	1.165	0.078	10.389	0.000	32.559	100.574	1.078	9.418	100.682
04JR-MA-150-009	0.001	0.002	0.000	56.485	0.044	0.013	1.917	0.046	6.912	0.002	35.074	100.495	1.088	5.934	100.604
04JR-MA-150-010	0.005	0.022	0.000	55.743	0.007	0.011	0.962	0.071	8.299	0.004	34.999	100.121	1.196	7.223	100.241
04JR-MA-150-011	0.027	0.000	0.020	58.018	0.045	0.001	4.846	0.142	8.409	0.000	28.914	100.422	1.256	7.278	100.548
04JR-MA-150-012	0.001	0.004	0.070	55.610	0.000	0.000	1.094	0.098	10.107	0.003	33.009	99.998	1.455	8.798	100.143
04JR-MA-150-013	0.001	0.000	0.027	56.086	0.000	0.000	1.513	0.055	11.537	0.000	30.736	99.956	1.364	10.309	100.093
04JR-MA-150-014	0.001	0.000	0.044	56.482	0.080	0.083	2.811	0.075	9.288	0.012	31.203	100.078	1.313	8.106	100.210
04JR-MA-150-015	0.012	0.000	0.015	57.558	0.002	0.017	2.238	0.337	11.284	0.008	29.021	100.492	0.423	10.904	100.534
04JR-MA-150-016	0.011	0.002	0.000	55.439	0.000	0.000	0.836	0.054	8.814	0.009	34.911	100.075	1.544	7.424	100.230
04JR-MA-150-017	0.019	0.018	0.000	57.797	0.000	0.105	4.077	0.187	8.853	0.000	29.585	100.641	0.980	7.971	100.739
04JR-MA-150-018	0.016	0.003	0.005	57.453	0.025	0.091	2.679	0.047	7.786	0.000	32.440	100.545	0.325	7.494	100.577
04JR-MA-150-019	0.007	0.000	0.000	57.991	0.000	0.024	3.238	0.189	11.962	0.000	27.063	100.474	0.636	11.389	100.538
04JR-MA-150-020	0.001	0.001	0.056	56.368	0.010	0.028	1.315	0.066	11.958	0.000	30.618	100.418	1.099	10.969	100.528
04JR-MA-150-021	0.001	0.000	0.061	56.490	0.004	0.000	1.985	0.088	10.712	0.000	31.365	100.705	1.553	9.314	100.861
04JR-MA-150-022	0.114	0.004	0.002	57.440	0.016	0.000	4.008	0.101	6.055	0.000	32.576	100.316	0.951	5.199	100.411
04JR-MA-150-023	0.022	0.016	0.059	55.743	0.005	0.000	1.084	0.060	8.088	0.000	35.195	100.270	1.238	6.974	100.394
04JR-TM-018-001	0.001	0.013	0.005	56.951	0.003	0.023	3.031	0.180	8.577	0.000	31.368	100.152	1.197	7.500	100.272
04JR-TM-018-002	0.001	0.000	0.005	56.155	0.000	0.000	1.743	0.173	11.479	0.000	30.539	100.095	1.580	10.057	100.254
04JR-TM-018-003	0.001	0.004	0.000	57.290	0.011	0.100	3.073	0.084	10.684	0.000	28.819	100.066	0.754	10.005	100.142
04JR-TM-022-006	0.018	0.002	0.015	56.885	0.000	0.036	3.171	0.214	6.662	0.011	33.022	100.034	1.056	5.711	100.140
04JR-TM-024-001	0.004	0.019	0.000	56.972	0.012	0.072	2.756	0.088	7.653	0.000	32.766	100.341	0.874	6.866	100.428
04JR-TM-046-001	0.001	0.003	0.000	56.549	0.000	0.000	1.653	0.242	7.550	0.001	34.302	100.301	0.861	6.776	100.387
04JR-TM-052-001	0.735	0.011	0.088	55.538	0.000	0.024	0.777	0.082	8.448	0.000	34.318	100.022	0.000	8.448	100.022
04JR-TM-066-001	0.008	0.010	0.000	59.759	0.000	0.002	6.352	0.180	11.956	0.000	21.974	100.242	0.514	11.494	100.293

Sample	SiO_2	TiO_2	Nb_2O_5	Al_2O_3	Cr_2O_3	V_2O_5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe_2O_3	FeO	Total
CHROMITES															
OVERLAP FIELD POSSIBLE KIMBERLITIC															
04JR-MA-031-001	0.000	0.103	0.000	16.133	47.032	0.207	1.729	0.714	32.836	0.029	1.056	99.839	2.401	30.675	100.080
04JR-MA-101-006	0.033	0.015	0.002	50.927	19.627	0.183	22.194	0.131	4.829	0.005	0.844	98.790	0.000	4.829	98.790
04JR-MA-114-002	0.003	0.730	0.048	14.676	48.298	0.338	9.479	0.291	25.434	0.122	0.097	99.516	5.413	20.563	100.058
04JR-MA-114-003	0.000	0.573	0.000	15.034	47.976	0.315	10.948	0.268	24.399	0.122	0.069	99.703	6.805	18.276	100.384
04JR-MA-114-004	0.000	0.649	0.000	15.340	47.157	0.380	9.713	0.308	26.066	0.127	0.084	99.824	6.346	20.356	100.460
04JR-MA-114-005	0.000	0.768	0.000	14.993	47.403	0.316	9.412	0.307	26.051	0.107	0.100	99.457	5.999	20.653	100.058
04JR-MA-114-006	0.000	0.695	0.048	15.423	46.900	0.370	9.520	0.239	26.059	0.127	0.101	99.484	5.984	20.675	100.083
04JR-MA-114-007	0.024	0.639	0.000	15.678	47.148	0.378	9.678	0.295	25.251	0.106	0.096	99.293	5.478	20.321	99.842
04JR-MA-114-008	0.005	0.714	0.008	14.861	47.693	0.370	9.292	0.272	26.273	0.114	0.086	99.690	5.885	20.978	100.279
04JR-MA-114-009	0.026	0.590	0.000	16.121	46.831	0.340	10.231	0.265	24.736	0.115	0.080	99.336	5.821	19.499	99.919
04JR-MA-114-010	0.000	0.603	0.032	16.991	46.094	0.428	10.397	0.266	24.643	0.122	0.099	99.675	5.596	19.608	100.236
04JR-MA-114-011	0.006	0.590	0.000	15.573	46.598	0.339	11.053	0.271	24.768	0.132	0.082	99.413	7.352	18.152	100.150
04JR-MA-114-012	0.008	0.745	0.000	15.756	47.845	0.393	9.280	0.269	25.591	0.118	0.081	100.085	4.756	21.311	100.562
04JR-MA-114-013	0.010	0.641	0.053	16.461	47.067	0.381	9.588	0.265	25.191	0.106	0.079	99.840	4.844	20.832	100.326
04JR-MA-114-014	0.015	0.678	0.000	15.385	47.399	0.342	9.611	0.283	26.080	0.110	0.108	100.010	6.111	20.582	100.622
04JR-MA-114-015	0.005	0.759	0.040	15.577	48.019	0.374	9.251	0.265	25.583	0.118	0.060	100.051	4.697	21.357	100.521
04JR-MA-114-016	0.022	0.617	0.021	14.391	47.940	0.311	10.406	0.288	25.506	0.102	0.065	99.668	7.137	19.084	100.383
04JR-MA-114-017	0.000	0.637	0.000	14.932	47.712	0.379	9.586	0.296	25.954	0.118	0.085	99.699	6.119	20.448	100.312
04JR-MA-114-018	0.000	0.694	0.000	15.089	48.083	0.407	9.484	0.251	25.330	0.123	0.082	99.544	5.142	20.703	100.059
04JR-MA-114-019	0.003	0.707	0.004	15.016	47.560	0.422	9.421	0.294	25.723	0.133	0.067	99.348	5.542	20.737	99.903
04JR-MA-114-020	0.000	0.621	0.000	15.625	47.122	0.474	9.422	0.265	25.982	0.117	0.080	99.708	5.564	20.976	100.265
04JR-MA-114-021	0.020	0.738	0.008	15.265	47.031	0.370	9.497	0.287	26.027	0.114	0.099	99.454	5.953	20.670	100.051
04JR-MA-114-022	0.000	0.722	0.000	14.661	48.051	0.388	9.499	0.285	25.948	0.113	0.085	99.751	5.876	20.661	100.340
04JR-MA-114-023	0.000	0.523	0.000	14.397	48.257	0.276	11.118	0.290	24.409	0.098	0.086	99.454	7.427	17.726	100.198
04JR-MA-114-024	0.001	0.720	0.000	15.390	47.322	0.363	9.381	0.288	25.849	0.116	0.088	99.519	5.581	20.827	100.078
04JR-MA-114-025	0.000	0.711	0.078	15.298	46.966	0.419	9.580	0.273	26.218	0.134	0.097	99.774	6.087	20.741	100.384
04JR-MA-114-026	0.004	0.702	0.000	15.217	47.422	0.384	9.469	0.297	26.042	0.114	0.096	99.746	5.882	20.749	100.336
04JR-MA-114-027	0.004	0.764	0.063	15.462	46.893	0.377	9.417	0.262	26.230	0.107	0.084	99.663	5.816	20.997	100.245
04JR-MA-114-028	0.000	0.687	0.000	15.242	47.323	0.412	9.349	0.263	25.854	0.112	0.098	99.339	5.548	20.861	99.895
04JR-MA-114-029	0.003	0.757	0.028	15.242	47.784	0.371	9.488	0.280	25.860	0.133	0.099	100.043	5.552	20.864	100.600
04JR-MA-114-030	0.025	0.714	0.000	15.345	48.140	0.353	8.962	0.266	25.820	0.123	0.092	99.840	4.720	21.573	100.312
04JR-MA-114-031	0.000	0.682	0.045	15.845	46.985	0.418	9.955	0.268	25.366	0.110	0.096	99.771	5.724	20.216	100.344
04JR-MA-114-032	0.000	0.529	0.079	15.014	47.581	0.253	11.083	0.298	24.399	0.129	0.070	99.434	7.236	17.888	100.159
04JR-MA-148-002	0.000	1.002	0.061	14.627	37.630	0.188	0.640	1.392	39.651	0.028	3.721	98.939	11.101	29.662	100.051

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
POSSIBLE KIMBERLITIC CHROMIAN DIOPSIDES (According to ternary and binary plot)											
04JR-MA-022-001	54.336	0.078	2.531	0.587	15.398	20.106	0.075	5.278	1.495	0.000	99.885
04JR-MA-034-009	54.611	0.004	0.397	0.893	16.464	22.753	0.193	3.812	0.679	0.000	99.806
04JR-MA-066-002	53.500	0.034	1.717	0.590	15.798	21.772	0.199	5.036	0.947	0.000	99.593
04JR-MA-119-004	55.101	0.120	1.088	0.353	17.320	24.019	0.179	1.058	0.738	0.000	99.975
04JR-SG-013-009	54.810	0.091	1.352	1.061	15.950	21.939	0.092	3.202	1.485	0.001	99.982
04JR-SG-015-021	54.987	0.049	0.676	0.813	16.929	23.191	0.099	2.627	0.799	0.001	100.171
CHROMIAN DIOPSIDES (NON KIMBERLITIC)											
(0.5 < Cr_2O_3 < 1.5 wt%)											
04JR-MA-001-004	53.400	0.149	1.663	0.867	17.859	21.996	0.087	3.422	0.363	0.000	99.806
04JR-MA-001-005	53.984	0.147	1.705	1.220	18.329	20.786	0.105	3.411	0.461	0.004	100.151
04JR-MA-001-006	53.443	0.170	1.767	1.283	17.632	21.470	0.100	3.471	0.431	0.007	99.773
04JR-MA-001-007	53.546	0.161	1.589	1.017	17.624	22.209	0.083	3.040	0.357	0.012	99.637
04JR-MA-001-008	53.388	0.170	1.831	1.311	17.899	20.992	0.107	3.420	0.453	0.003	99.573
04JR-MA-001-009	54.069	0.158	1.539	0.920	17.944	21.879	0.098	3.294	0.392	0.007	100.298
04JR-MA-001-010	53.779	0.153	1.475	0.888	18.113	21.569	0.087	3.171	0.377	0.001	99.611
04JR-MA-001-011	53.887	0.134	1.466	0.860	18.134	21.660	0.086	3.240	0.375	0.008	99.849
04JR-MA-001-012	53.504	0.166	1.707	1.189	17.610	21.826	0.095	3.196	0.380	0.001	99.673
04JR-MA-001-013	53.940	0.148	1.306	0.806	17.688	22.312	0.080	3.054	0.355	0.000	99.690
04JR-MA-001-014	54.214	0.146	1.475	0.731	17.972	21.641	0.117	3.196	0.362	0.006	99.861
04JR-MA-001-015	54.279	0.139	1.509	0.905	18.321	21.448	0.086	3.308	0.386	0.004	100.385
04JR-MA-001-016	53.953	0.155	1.737	1.260	17.890	21.361	0.114	3.207	0.410	0.006	100.093
04JR-MA-001-017	53.718	0.145	1.448	0.844	17.754	22.002	0.092	3.269	0.370	0.005	99.646
04JR-MA-001-018	53.691	0.177	1.903	1.118	18.231	21.168	0.085	3.500	0.393	0.008	100.274
04JR-MA-001-019	53.504	0.153	1.734	1.219	17.999	21.587	0.088	3.267	0.412	0.000	99.962
04JR-MA-001-020	53.469	0.175	1.711	1.043	17.820	21.757	0.110	3.389	0.391	0.003	99.867
04JR-MA-001-021	53.751	0.151	1.536	0.877	18.449	21.500	0.095	3.267	0.361	0.006	99.991
04JR-MA-001-022	53.444	0.160	1.482	0.899	17.886	21.931	0.097	3.131	0.360	0.000	99.390
04JR-MA-001-023	53.931	0.170	1.675	0.938	18.029	21.434	0.099	3.306	0.398	0.006	99.985
04JR-MA-001-024	53.233	0.235	1.913	1.151	16.886	22.892	0.098	3.311	0.275	0.005	99.998
04JR-MA-001-025	54.041	0.142	1.468	0.980	17.646	22.343	0.091	3.013	0.354	0.003	100.081
04JR-MA-001-027	53.508	0.153	1.714	1.271	18.150	21.008	0.089	3.200	0.456	0.003	99.550
04JR-MA-001-028	53.501	0.158	1.616	0.939	17.684	21.889	0.093	3.307	0.396	0.005	99.589
04JR-MA-001-029	53.598	0.155	1.862	0.936	17.804	21.433	0.092	3.284	0.364	0.000	99.528
04JR-MA-001-030	53.741	0.178	1.635	1.088	17.875	21.859	0.095	3.204	0.371	0.004	100.047
04JR-MA-001-031	53.888	0.171	1.346	0.593	18.274	21.565	0.113	3.535	0.315	0.005	99.806
04JR-MA-001-032	52.944	0.157	1.951	1.401	17.360	21.779	0.097	3.127	0.415	0.002	99.232
04JR-MA-001-033	54.347	0.158	1.123	0.665	18.184	22.192	0.093	2.934	0.309	0.004	100.008
04JR-MA-001-034	54.119	0.156	1.568	0.761	18.022	21.748	0.066	3.166	0.378	0.008	99.992
04JR-MA-001-035	53.892	0.146	1.440	0.759	18.043	21.660	0.100	3.267	0.356	0.001	99.664
04JR-MA-001-037	53.336	0.202	1.700	0.931	17.306	22.699	0.080	3.235	0.254	0.005	99.748
04JR-MA-001-039	53.664	0.165	1.677	0.897	18.046	21.640	0.099	3.248	0.400	0.005	99.839
04JR-MA-001-041	53.506	0.178	1.653	0.957	18.039	21.776	0.107	3.196	0.370	0.006	99.786
04JR-MA-001-042	53.318	0.172	1.642	0.500	17.515	21.809	0.107	3.660	0.358	0.004	99.084
04JR-MA-001-043	53.282	0.209	1.464	0.805	17.563	22.335	0.086	3.323	0.229	0.000	99.295
04JR-MA-001-044	53.404	0.148	1.688	0.848	18.287	21.240	0.099	3.268	0.405	0.004	99.390
04JR-MA-001-045	53.441	0.153	1.686	1.066	17.877	21.607	0.103	3.046	0.378	0.002	99.359
04JR-MA-001-047	53.416	0.181	1.955	1.094	17.495	21.976	0.091	3.228	0.371	0.007	99.813
04JR-MA-001-049	53.217	0.192	1.829	1.369	18.035	21.233	0.094	3.253	0.417	0.002	99.641
04JR-MA-001-050	54.265	0.116	1.236	0.872	18.647	20.956	0.104	3.459	0.343	0.003	100.001

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-001-051	53.402	0.130	1.764	1.228	17.787	21.553	0.083	3.103	0.422	0.002	99.474
04JR-MA-001-053	53.629	0.137	1.638	1.234	18.252	21.132	0.083	3.080	0.413	0.003	99.601
04JR-MA-001-054	53.413	0.224	1.392	0.697	17.337	22.377	0.100	3.451	0.231	0.000	99.222
04JR-MA-001-055	53.867	0.149	1.667	1.078	18.280	21.116	0.120	3.212	0.430	0.005	99.921
04JR-MA-001-056	53.594	0.117	1.653	1.028	18.175	21.296	0.082	3.229	0.403	0.011	99.588
04JR-MA-001-057	53.810	0.148	1.452	0.911	17.948	21.828	0.105	2.961	0.348	0.005	99.516
04JR-MA-001-058	52.910	0.208	2.295	0.910	17.578	21.396	0.108	3.733	0.400	0.002	99.539
04JR-MA-001-059	54.029	0.156	1.573	1.079	17.788	21.881	0.095	3.036	0.368	0.002	100.006
04JR-MA-001-060	53.742	0.152	1.278	0.809	18.178	21.742	0.101	3.242	0.346	0.000	99.590
04JR-MA-001-061	53.716	0.181	1.676	0.744	17.805	21.871	0.071	3.377	0.349	0.001	99.790
04JR-MA-001-062	53.339	0.164	1.567	0.676	18.078	21.604	0.083	3.399	0.344	0.000	99.254
04JR-MA-001-063	53.180	0.208	1.978	0.739	17.596	21.647	0.107	3.573	0.375	0.000	99.402
04JR-MA-001-064	53.742	0.170	1.859	0.976	18.205	21.287	0.099	3.464	0.419	0.008	100.227
04JR-MA-001-065	53.645	0.156	1.564	0.925	18.116	22.045	0.089	3.128	0.362	0.008	100.037
04JR-MA-001-066	53.719	0.166	1.580	0.662	17.895	21.954	0.089	3.347	0.354	0.001	99.768
04JR-MA-001-067	54.091	0.148	1.436	0.819	18.072	21.470	0.100	3.333	0.391	0.002	99.860
04JR-MA-001-068	53.944	0.159	1.524	0.792	18.308	21.528	0.107	3.248	0.366	0.001	99.975
04JR-MA-001-069	53.579	0.189	1.706	0.604	17.569	21.431	0.140	4.141	0.456	0.003	99.817
04JR-MA-001-070	53.504	0.179	1.432	0.862	17.702	22.486	0.086	3.305	0.243	0.000	99.798
04JR-MA-001-071	52.978	0.148	1.564	1.113	17.832	21.672	0.107	3.099	0.423	0.000	98.936
04JR-MA-001-073	53.210	0.259	1.694	0.865	18.084	20.809	0.114	4.093	0.434	0.006	99.567
04JR-MA-002-008	53.095	0.267	2.025	1.092	17.075	22.498	0.080	3.317	0.274	0.000	99.723
04JR-MA-002-009	53.901	0.187	1.756	1.238	17.618	22.084	0.087	3.093	0.415	0.008	100.389
04JR-MA-002-010	54.074	0.137	1.362	0.956	18.121	22.121	0.079	2.986	0.372	0.009	100.217
04JR-MA-002-011	53.536	0.174	1.650	0.845	17.621	21.748	0.088	3.387	0.358	0.006	99.412
04JR-MA-002-012	53.838	0.154	1.577	1.133	17.728	21.931	0.103	3.033	0.398	0.003	99.896
04JR-MA-002-013	54.755	0.007	0.223	0.522	16.431	23.748	0.210	3.843	0.471	0.000	100.209
04JR-MA-003-001	54.220	0.056	0.850	0.754	15.558	23.598	0.096	4.260	0.729	0.006	100.126
04JR-MA-003-003	53.829	0.037	1.188	0.601	16.131	23.185	0.109	3.987	0.542	0.000	99.610
04JR-MA-006-001	54.148	0.031	0.815	0.510	15.177	23.827	0.167	4.327	0.642	0.005	99.648
04JR-MA-012-006	53.265	0.084	2.508	0.915	15.443	22.917	0.143	3.938	0.687	0.000	99.900
04JR-MA-012-008	52.938	0.218	2.544	1.033	17.622	22.215	0.076	3.079	0.319	0.008	100.053
04JR-MA-016-002	54.384	0.001	0.529	0.559	15.003	23.744	0.185	4.926	0.544	0.004	99.879
04JR-MA-016-003	54.267	0.114	1.582	0.554	15.728	22.752	0.135	3.959	0.745	0.003	99.837
04JR-MA-016-004	53.527	0.228	1.637	1.099	17.679	22.801	0.051	2.468	0.360	0.010	99.860
04JR-MA-016-005	53.524	0.288	1.721	0.629	16.568	23.454	0.112	3.502	0.501	0.002	100.300
04JR-MA-016-007	54.240	0.303	0.894	0.712	17.111	23.484	0.089	2.769	0.451	0.000	100.054
04JR-MA-016-009	54.072	0.307	1.361	1.065	16.648	23.241	0.092	2.794	0.727	0.005	100.310
04JR-MA-016-010	53.545	0.272	1.074	0.680	16.776	23.990	0.055	2.249	0.372	0.009	99.022
04JR-MA-022-001	54.336	0.078	2.531	0.587	15.398	20.106	0.075	5.278	1.495	0.000	99.885
04JR-MA-022-002	53.433	0.133	2.575	0.759	14.807	22.061	0.067	4.505	1.240	0.007	99.588
04JR-MA-022-003	54.784	0.000	0.277	0.633	16.532	23.854	0.206	3.415	0.484	0.003	100.189
04JR-MA-024-002	54.593	0.005	0.328	0.667	16.178	23.181	0.219	4.223	0.541	0.001	99.934
04JR-MA-024-003	53.581	0.040	1.138	0.792	14.367	22.636	0.184	5.334	1.114	0.000	99.187
04JR-MA-024-004	54.537	0.020	0.495	0.502	16.613	23.773	0.126	3.266	0.455	0.004	99.791
04JR-MA-024-006	54.589	0.064	2.080	0.633	15.546	22.168	0.080	4.252	1.124	0.001	100.538
04JR-MA-026-001	53.947	0.037	1.055	0.682	14.969	23.661	0.177	4.240	0.742	0.000	99.509
04JR-MA-026-003	53.665	0.013	0.338	0.690	14.859	23.505	0.276	5.658	0.584	0.004	99.591
04JR-MA-028-001	54.426	0.015	0.804	0.693	16.326	23.627	0.144	3.593	0.592	0.000	100.220
04JR-MA-028-002	54.322	0.028	0.636	0.689	15.277	23.506	0.203	4.661	0.871	0.000	100.193
04JR-MA-032-002	54.202	0.045	0.886	0.701	14.878	23.531	0.171	4.799	0.791	0.000	100.004

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-032-003	54.282	0.020	0.415	0.873	15.606	23.235	0.198	4.283	0.880	0.002	99.793
04JR-MA-032-005	54.414	0.014	0.463	0.660	15.419	23.065	0.239	4.950	0.888	0.000	100.112
04JR-MA-032-007	54.158	0.085	0.819	0.705	15.369	23.589	0.223	4.472	0.610	0.001	100.029
04JR-MA-034-001	53.707	0.026	0.857	0.920	14.415	22.951	0.205	5.383	1.070	0.001	99.535
04JR-MA-034-002	54.383	0.016	0.827	0.530	15.355	23.790	0.136	4.291	0.656	0.000	99.983
04JR-MA-034-003	53.770	0.012	0.720	0.830	14.549	23.737	0.153	4.872	0.877	0.000	99.519
04JR-MA-034-004	54.134	0.023	0.862	0.651	14.635	23.479	0.172	5.402	0.752	0.000	100.109
04JR-MA-034-010	54.195	0.024	0.550	0.850	15.638	22.776	0.180	4.757	0.854	0.000	99.824
04JR-MA-036-005	54.536	0.008	0.529	0.633	16.003	23.994	0.164	3.663	0.609	0.000	100.138
04JR-MA-036-006	54.547	0.013	0.545	0.594	15.253	23.312	0.199	4.522	0.862	0.000	99.847
04JR-MA-041-002	54.655	0.013	0.214	0.625	15.787	23.309	0.250	4.243	0.869	0.000	99.965
04JR-MA-041-003	53.344	0.076	1.705	0.917	15.013	23.747	0.129	4.355	0.643	0.000	99.929
04JR-MA-042-001	54.296	0.016	0.798	0.757	14.747	23.382	0.184	5.119	0.767	0.000	100.066
04JR-MA-046-002	53.212	0.481	1.642	0.730	16.987	23.674	0.068	3.059	0.274	0.000	100.127
04JR-MA-046-003	54.113	0.026	0.671	0.508	15.067	23.881	0.203	4.599	0.637	0.003	99.707
04JR-MA-048-002	53.959	0.048	1.896	0.542	14.406	23.198	0.132	4.977	0.956	0.000	100.113
04JR-MA-050-001	54.575	0.034	0.815	0.623	17.057	22.151	0.115	3.251	0.526	0.074	99.220
04JR-MA-050-002	54.065	0.033	0.790	0.633	14.688	23.740	0.174	4.993	0.705	0.004	99.824
04JR-MA-051-001	54.524	0.015	0.930	0.527	15.686	22.832	0.153	4.396	1.059	0.000	100.121
04JR-MA-051-002	54.179	0.033	0.871	0.669	14.938	23.783	0.208	4.586	0.757	0.001	100.024
04JR-MA-058-001	54.282	0.014	0.601	0.558	14.932	23.717	0.203	4.955	0.583	0.004	99.848
04JR-MA-058-004	54.582	0.007	0.634	0.759	15.266	24.068	0.172	3.966	0.647	0.000	100.101
04JR-MA-059-001	54.256	0.071	1.559	0.604	15.647	24.136	0.194	2.867	0.758	0.000	100.092
04JR-MA-060-002	54.127	0.002	0.271	0.609	16.109	23.885	0.161	3.822	0.478	0.000	99.464
04JR-MA-062-004	54.936	0.021	0.740	0.658	15.761	23.678	0.141	3.766	0.698	0.003	100.401
04JR-MA-065-001	55.385	0.101	1.513	0.568	17.169	24.181	0.026	0.472	0.970	0.000	100.384
04JR-MA-066-003	52.534	0.087	3.150	0.617	15.045	22.274	0.085	3.982	1.154	0.000	98.926
04JR-MA-069-001	53.433	0.068	1.003	0.687	14.452	23.336	0.176	5.894	0.575	0.000	99.624
04JR-MA-069-002	54.042	0.037	1.452	0.606	16.027	24.229	0.098	2.261	0.752	0.000	99.504
04JR-MA-069-004	53.156	0.014	1.647	0.861	13.842	22.334	0.243	5.891	1.503	0.000	99.492
04JR-MA-069-006	53.153	0.094	1.931	0.677	15.946	21.316	0.199	4.983	0.725	0.001	99.025
04JR-MA-069-008	53.329	0.060	0.958	0.713	14.403	23.446	0.223	5.473	0.801	0.000	99.405
04JR-MA-070-004	53.655	0.038	0.526	0.798	15.674	22.722	0.196	4.672	0.790	0.000	99.069
04JR-MA-073-003	54.236	0.074	1.895	0.553	15.866	24.281	0.111	2.230	0.801	0.000	100.047
04JR-MA-075-001	53.689	0.069	0.566	1.017	14.224	23.103	0.161	5.474	1.013	0.006	99.322
04JR-MA-080-001	52.790	0.055	1.264	0.652	14.257	23.635	0.188	5.989	0.503	0.000	99.334
04JR-MA-080-002	54.194	0.005	0.478	0.537	16.085	23.960	0.154	3.729	0.529	0.003	99.674
04JR-MA-080-003	53.523	0.015	0.879	0.537	14.915	23.851	0.154	5.044	0.408	0.002	99.328
04JR-MA-080-004	53.492	0.027	1.132	0.504	14.802	24.642	0.131	4.821	0.343	0.000	99.895
04JR-MA-085-002	53.332	0.086	2.055	0.600	15.032	22.227	0.144	5.651	0.602	0.002	99.731
04JR-MA-098-001	53.680	0.015	1.209	0.602	16.143	23.076	0.129	4.032	0.498	0.015	99.398
04JR-MA-099-002	52.410	0.130	2.328	0.600	14.742	22.438	0.152	5.587	0.749	0.000	99.137
04JR-MA-099-003	53.139	0.086	2.165	0.630	15.221	22.116	0.076	4.724	0.986	0.007	99.150
04JR-MA-102-001	54.975	0.082	0.599	1.072	16.798	23.322	0.028	2.116	0.962	0.000	99.954
04JR-MA-102-002	54.481	0.050	0.505	0.589	17.075	23.059	0.163	3.376	0.502	0.000	99.799
04JR-MA-103-002	53.360	0.100	2.464	0.770	15.842	22.656	0.123	3.618	0.657	0.000	99.589
04JR-MA-103-003	53.912	0.263	1.923	0.829	15.787	23.502	0.112	2.419	1.062	0.007	99.816
04JR-MA-107-002	54.049	0.117	1.569	0.726	16.470	23.012	0.107	3.041	0.660	0.000	99.750
04JR-MA-108-001	52.921	0.119	2.232	1.035	14.314	22.653	0.160	4.421	1.372	0.000	99.228
04JR-MA-109-002	53.718	0.047	1.605	0.542	14.874	23.361	0.184	4.973	0.876	0.005	100.183
04JR-MA-109-003	54.057	0.028	0.755	0.764	15.176	23.359	0.204	5.006	0.760	0.000	100.108

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-112-003	53.525	0.191	2.675	1.014	16.342	24.261	0.222	0.698	0.789	0.005	99.721
04JR-MA-114-035	55.360	0.072	1.345	0.506	16.446	24.015	0.086	1.920	0.871	0.004	100.625
04JR-MA-114-038	53.733	0.080	0.782	0.761	15.473	24.143	0.131	3.774	0.615	0.000	99.493
04JR-MA-114-040	53.963	0.087	3.056	0.653	15.470	20.923	0.073	5.329	1.111	0.001	100.666
04JR-MA-114-042	53.509	0.088	1.891	0.638	15.271	22.252	0.230	5.159	0.731	0.000	99.768
04JR-MA-115-001	54.246	0.048	1.204	1.457	15.108	24.078	0.163	3.244	0.745	0.001	100.293
04JR-MA-115-002	53.458	0.121	2.194	0.956	16.148	23.546	0.091	2.926	0.677	0.000	100.118
04JR-MA-115-003	54.790	0.096	0.820	0.564	17.284	24.458	0.062	1.374	0.442	0.000	99.890
04JR-MA-115-006	54.711	0.067	0.865	0.672	17.000	24.533	0.083	1.620	0.456	0.001	100.008
04JR-MA-117-002	54.546	0.069	1.244	0.899	16.547	23.676	0.073	2.033	0.866	0.001	99.953
04JR-MA-119-001	55.195	0.035	1.002	0.635	17.240	24.065	0.124	1.294	0.771	0.006	100.366
04JR-MA-119-002	54.536	0.098	0.997	0.665	16.675	24.576	0.098	1.993	0.479	0.000	100.117
04JR-MA-119-003	54.376	0.154	1.607	0.527	16.212	24.041	0.082	2.323	0.793	0.005	100.119
04JR-MA-122-001	54.770	0.006	0.192	0.518	17.266	23.956	0.124	2.543	0.361	0.000	99.736
04JR-MA-122-002	55.100	0.087	1.199	0.500	16.859	24.065	0.070	1.577	0.892	0.000	100.350
04JR-MA-130-005	54.069	0.037	0.371	0.539	15.480	23.103	0.271	5.019	0.733	0.000	99.622
04JR-MA-131-001	54.270	0.063	0.652	0.576	14.998	22.985	0.252	5.214	0.898	0.000	99.909
04JR-MA-133-001	54.266	0.110	0.964	0.556	16.319	23.933	0.157	2.202	0.787	0.000	99.294
04JR-MA-135-002	53.516	0.016	3.178	0.531	14.334	21.650	0.195	5.287	1.215	0.000	99.922
04JR-MA-136-007	53.923	0.062	1.963	0.522	15.458	22.475	0.079	4.302	0.834	0.002	99.619
04JR-MA-136-011	54.361	0.046	0.658	0.521	15.171	23.863	0.150	4.574	0.639	0.000	99.983
04JR-MA-138-002	53.885	0.055	1.487	0.616	15.003	24.050	0.168	3.599	0.759	0.000	99.622
04JR-MA-140-007	54.652	0.021	0.872	0.621	16.176	22.608	0.202	4.404	0.626	0.000	100.180
04JR-MA-140-010	53.921	0.004	0.953	0.539	15.890	23.310	0.169	3.933	0.650	0.000	99.369
04JR-MA-140-011	54.113	0.022	0.864	0.748	15.779	23.263	0.170	4.135	0.719	0.000	99.812
04JR-MA-141-002	54.417	0.012	0.662	0.806	14.696	23.795	0.177	4.679	0.681	0.000	99.924
04JR-MA-141-003	54.541	0.016	0.525	0.709	15.490	23.389	0.171	4.349	0.676	0.000	99.866
04JR-MA-141-004	53.424	0.046	0.912	0.663	14.810	23.486	0.176	5.082	0.708	0.000	99.306
04JR-MA-141-005	53.267	0.028	0.994	0.573	14.100	22.461	0.242	6.484	0.792	0.000	98.942
04JR-MA-141-006	53.484	0.019	0.654	0.541	15.290	23.438	0.174	4.644	0.643	0.000	98.887
04JR-MA-141-007	53.825	0.024	0.322	0.529	16.218	24.164	0.156	3.372	0.425	0.000	99.037
04JR-MA-141-013	54.162	0.022	0.152	0.509	16.848	24.004	0.180	3.092	0.374	0.000	99.342
04JR-MA-142-001	53.422	0.031	1.492	0.730	15.315	22.967	0.139	4.437	0.803	0.000	99.336
04JR-MA-142-002	53.707	0.036	0.820	0.731	14.551	23.407	0.180	5.080	0.751	0.000	99.263
04JR-MA-142-003	53.938	0.031	0.512	0.616	15.647	23.408	0.184	4.311	0.623	0.000	99.271
04JR-MA-142-004	53.965	0.024	0.412	0.624	15.291	23.701	0.115	4.736	0.476	0.001	99.346
04JR-MA-142-005	53.598	0.021	0.496	0.872	15.147	23.047	0.148	4.347	0.896	0.000	98.571
04JR-MA-142-010	53.632	0.041	0.815	0.567	15.909	22.901	0.200	4.352	0.731	0.000	99.148
04JR-MA-143-005	52.759	0.021	0.858	0.551	15.359	23.524	0.144	4.151	0.672	0.000	98.036
04JR-MA-143-008	53.940	0.024	0.174	0.543	16.379	23.331	0.204	3.793	0.401	0.000	98.789
04JR-MA-143-009	53.572	0.018	0.702	0.747	16.446	22.956	0.170	3.669	0.586	0.000	98.865
04JR-MA-143-010	53.829	0.024	0.224	0.796	15.808	23.413	0.235	3.933	0.684	0.000	98.947
04JR-MA-143-011	52.962	0.030	0.766	0.522	15.036	23.507	0.210	4.988	0.686	0.000	98.707
04JR-MA-143-012	53.920	0.012	0.641	0.512	16.086	22.766	0.190	4.436	0.523	0.003	99.089
04JR-MA-143-013	52.912	0.020	0.599	0.537	14.833	23.386	0.197	5.468	0.561	0.000	98.513
04JR-MA-143-014	53.878	0.021	0.509	0.812	15.765	22.437	0.219	4.639	0.811	0.000	99.091
04JR-MA-149-001	54.734	0.028	0.539	0.779	16.408	24.059	0.116	2.868	0.556	0.000	100.088
04JR-MA-160-001	54.300	0.072	0.687	1.087	16.581	24.206	0.061	2.184	0.546	0.001	99.725
04JR-MA-160-003	54.582	0.024	0.495	0.690	15.665	23.912	0.169	3.762	0.560	0.000	99.859
04JR-MA-160-004	53.677	0.021	0.580	0.776	13.920	22.866	0.268	6.831	0.724	0.005	99.666
04JR-MA-160-005	52.111	0.303	2.391	1.132	16.370	23.958	0.035	2.464	0.387	0.021	99.172

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-161-001	53.445	0.020	0.644	0.501	16.832	23.367	0.124	3.228	0.378	0.000	98.539
04JR-SG-001-002	53.255	0.073	0.113	0.632	16.658	23.623	0.135	2.891	0.447	0.001	97.826
04JR-SG-003-001	52.975	0.010	0.596	0.675	14.141	23.183	0.313	6.122	0.579	0.003	98.598
04JR-SG-003-002	54.268	0.012	0.752	0.686	16.330	23.092	0.144	4.050	0.626	0.000	99.961
04JR-SG-004-001	55.038	0.014	0.851	0.709	16.622	24.443	0.081	1.897	0.684	0.000	100.340
04JR-SG-004-003	53.878	0.071	1.786	0.939	14.946	23.210	0.142	3.940	1.163	0.002	100.077
04JR-SG-004-005	54.296	0.037	0.642	0.640	15.818	22.348	0.196	4.999	0.865	0.000	99.841
04JR-SG-005-001	53.971	0.012	0.874	0.931	14.724	22.436	0.222	5.710	0.972	0.004	99.855
04JR-SG-007-004	53.896	0.001	0.927	0.606	15.551	23.112	0.234	4.849	0.800	0.000	99.977
04JR-SG-007-006	54.055	0.041	1.408	0.612	15.449	23.255	0.199	4.262	0.929	0.000	100.210
04JR-SG-008-002	53.590	0.303	0.935	1.128	18.974	18.051	0.149	6.143	0.495	0.000	99.767
04JR-SG-009-003	53.671	0.028	1.545	0.525	15.586	23.818	0.158	3.776	0.649	0.001	99.756
04JR-SG-010-002	54.230	0.013	0.674	0.716	15.714	23.557	0.192	4.266	0.721	0.000	100.083
04JR-SG-010-003	54.120	0.004	0.452	0.506	15.806	23.457	0.150	4.849	0.488	0.000	99.832
04JR-SG-010-004	54.226	0.027	1.352	0.694	16.581	23.321	0.114	3.102	0.636	0.002	100.054
04JR-SG-011-006	54.396	0.086	0.361	0.663	17.857	23.959	0.094	1.324	0.488	0.000	99.227
04JR-SG-011-007	53.547	0.106	2.204	1.338	16.616	24.709	0.051	0.448	0.530	0.000	99.548
04JR-SG-011-008	54.400	0.067	0.584	0.752	17.201	24.615	0.078	1.314	0.484	0.000	99.494
04JR-SG-011-009	54.431	0.026	0.933	0.648	16.351	25.042	0.121	2.157	0.369	0.000	100.078
04JR-SG-011-010	53.790	0.159	2.961	0.877	15.678	23.142	0.139	2.583	1.109	0.000	100.437
04JR-SG-011-011	54.461	0.312	0.872	0.678	16.333	23.421	0.082	2.263	1.139	0.000	99.561
04JR-SG-011-012	55.051	0.040	1.107	0.515	17.417	25.065	0.045	0.494	0.534	0.000	100.269
04JR-SG-011-014	54.242	0.111	2.204	0.716	16.896	23.738	0.073	1.624	0.833	0.000	100.436
04JR-SG-011-016	54.352	0.103	0.971	0.654	17.225	24.978	0.055	1.667	0.351	0.002	100.358
04JR-SG-011-017	54.823	0.091	1.433	0.607	16.854	24.718	0.079	1.566	0.577	0.000	100.749
04JR-SG-011-018	54.928	0.081	0.702	0.723	17.602	24.361	0.081	1.451	0.545	0.012	100.486
04JR-SG-011-021	53.286	0.109	2.521	0.623	15.883	22.264	0.182	4.425	0.840	0.000	100.131
04JR-SG-011-024	54.596	0.082	0.594	0.628	17.302	25.040	0.086	1.467	0.410	0.001	100.207
04JR-SG-011-026	54.212	0.040	1.200	0.500	16.208	23.970	0.099	2.759	0.681	0.002	99.670
04JR-SG-011-028	54.926	0.075	0.522	0.640	17.561	25.049	0.080	1.128	0.413	0.000	100.394
04JR-SG-011-030	54.823	0.059	0.648	0.835	17.062	24.797	0.070	1.223	0.513	0.000	100.029
04JR-SG-011-031	54.856	0.074	0.516	0.650	17.560	25.002	0.063	1.191	0.400	0.003	100.316
04JR-SG-011-032	53.159	0.078	2.207	0.881	16.336	24.447	0.089	2.515	0.469	0.000	100.181
04JR-SG-011-033	54.221	0.089	0.836	0.569	16.141	24.669	0.140	3.137	0.507	0.000	100.308
04JR-SG-011-034	53.679	0.284	2.674	0.593	16.656	25.030	0.118	0.743	0.457	0.005	100.238
04JR-SG-011-037	54.623	0.062	0.958	0.520	17.246	24.375	0.087	1.678	0.545	0.000	100.094
04JR-SG-011-039	54.038	0.091	1.652	0.660	16.221	24.210	0.113	2.560	0.706	0.001	100.250
04JR-SG-011-042	54.697	0.091	0.466	0.534	17.326	24.849	0.082	1.352	0.363	0.003	99.763
04JR-SG-011-045	52.856	0.112	2.125	0.694	16.207	24.153	0.101	2.870	0.474	0.001	99.592
04JR-SG-011-047	55.251	0.063	0.690	0.621	17.080	24.505	0.096	1.764	0.584	0.001	100.654
04JR-SG-012-001	54.291	0.055	0.418	0.637	15.811	23.854	0.204	4.276	0.448	0.000	99.993
04JR-SG-012-003	54.042	0.038	0.782	0.566	14.836	23.236	0.210	5.305	0.930	0.000	99.945
04JR-SG-013-002	54.168	0.051	1.525	0.605	16.053	24.665	0.073	2.658	0.492	0.000	100.290
04JR-SG-013-007	54.127	0.107	0.773	0.535	17.053	24.180	0.083	2.285	0.523	0.002	99.668
04JR-SG-013-008	53.335	0.068	1.688	0.631	16.352	23.292	0.090	3.210	0.646	0.004	99.316
04JR-SG-013-009	54.810	0.091	1.352	1.061	15.950	21.939	0.092	3.202	1.485	0.001	99.982
04JR-SG-013-011	54.664	0.059	0.699	0.765	17.093	24.581	0.085	1.713	0.508	0.005	100.169
04JR-SG-013-012	54.685	0.121	0.622	0.972	17.199	24.532	0.081	1.563	0.595	0.000	100.369
04JR-SG-013-015	54.114	0.060	1.689	0.569	17.094	25.381	0.054	1.002	0.294	0.001	100.257
04JR-SG-013-017	54.594	0.061	0.330	0.634	17.566	24.372	0.092	1.235	0.501	0.000	99.385
04JR-SG-013-019	53.934	0.096	2.007	0.642	15.790	22.924	0.140	2.940	1.199	0.000	99.671

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-SG-013-021	53.078	0.121	3.502	0.879	16.117	24.099	0.112	0.858	0.849	0.003	99.617
04JR-SG-013-022	54.591	0.133	0.232	0.608	17.807	24.701	0.081	1.336	0.400	0.001	99.889
04JR-SG-013-025	54.602	0.036	1.049	0.533	17.033	25.258	0.042	1.307	0.359	0.002	100.221
04JR-SG-013-026	53.867	0.081	2.761	0.540	15.007	21.647	0.131	4.635	1.464	0.000	100.133
04JR-SG-013-029	53.923	0.046	0.967	0.513	16.696	24.181	0.090	2.715	0.412	0.001	99.543
04JR-SG-014-001	54.416	0.021	0.646	0.531	16.759	23.469	0.145	3.539	0.589	0.000	100.114
04JR-SG-015-003	54.595	0.066	0.455	0.607	17.439	25.046	0.080	1.415	0.391	0.000	100.095
04JR-SG-015-004	55.050	0.080	0.537	0.609	17.348	24.507	0.110	1.547	0.480	0.000	100.268
04JR-SG-015-008	55.500	0.021	0.259	0.567	17.954	25.571	0.006	0.345	0.333	0.000	100.556
04JR-SG-015-009	53.577	0.053	2.281	0.907	16.210	24.646	0.114	1.847	0.566	0.002	100.202
04JR-SG-015-010	54.304	0.075	1.994	0.815	15.611	21.918	0.122	3.848	1.315	0.000	100.003
04JR-SG-015-011	53.956	0.110	2.607	0.630	15.701	23.764	0.095	2.259	1.111	0.000	100.233
04JR-SG-015-012	54.968	0.030	1.475	0.500	17.596	25.198	0.049	0.247	0.557	0.000	100.621
04JR-SG-015-013	54.576	0.123	0.443	0.581	17.473	24.933	0.069	1.267	0.314	0.000	99.779
04JR-SG-015-014	53.844	0.094	1.766	1.140	16.536	24.922	0.057	1.623	0.496	0.001	100.479
04JR-SG-015-015	54.172	0.097	1.853	0.539	16.095	24.061	0.096	2.343	0.829	0.000	100.086
04JR-SG-015-017	54.655	0.086	0.665	0.524	17.088	24.846	0.074	1.466	0.427	0.002	99.834
04JR-SG-015-019	55.134	0.052	0.609	0.552	17.620	25.007	0.074	0.900	0.445	0.000	100.394
04JR-SG-015-026	55.042	0.056	0.410	0.664	18.083	24.660	0.080	0.905	0.433	0.000	100.332
04JR-SG-015-028	54.024	0.108	1.645	0.542	16.822	23.487	0.077	2.864	0.640	0.000	100.209
04JR-SG-015-029	54.458	0.078	1.079	0.581	16.987	24.770	0.079	1.455	0.532	0.004	100.023
04JR-SG-015-030	54.220	0.026	0.902	0.548	16.402	24.651	0.093	2.206	0.506	0.000	99.554
04JR-SG-015-033	54.192	0.076	0.445	0.649	17.558	24.355	0.092	1.309	0.397	0.000	99.072
04JR-SG-015-034	53.291	0.177	2.932	0.563	15.557	23.385	0.082	2.069	1.219	0.000	99.275
04JR-SG-015-037	54.657	0.067	0.311	0.634	17.696	24.649	0.062	1.375	0.353	0.003	99.806
04JR-TM-001-001	52.879	0.079	2.912	0.627	14.849	20.949	0.081	4.821	1.349	0.000	98.545
04JR-TM-005-001	52.960	0.041	0.815	0.506	14.931	23.330	0.163	4.900	0.686	0.000	98.332
04JR-TM-005-002	53.903	0.019	0.361	0.622	15.879	23.369	0.195	3.899	0.654	0.000	98.901
04JR-TM-005-003	52.920	0.021	0.267	0.673	16.046	23.723	0.155	3.756	0.455	0.003	98.019
04JR-TM-005-005	52.895	0.035	0.867	0.541	15.237	22.881	0.205	4.821	0.806	0.003	98.291
04JR-TM-005-006	54.054	0.012	0.185	0.664	16.316	23.800	0.166	3.284	0.445	0.006	98.931
04JR-TM-015-001	52.240	0.091	3.031	0.868	16.250	19.746	0.120	5.407	0.875	0.000	98.627
04JR-TM-019-001	53.328	0.036	1.730	0.781	15.256	22.564	0.143	4.247	0.767	0.000	98.852
04JR-TM-019-002	52.148	0.030	1.106	0.531	15.152	23.959	0.143	4.697	0.362	0.002	98.130
04JR-TM-019-003	54.407	0.019	1.000	0.704	16.808	24.455	0.030	1.224	0.608	0.000	99.253
04JR-TM-023-003	52.722	0.064	1.735	0.636	15.468	23.835	0.131	2.743	0.574	0.000	97.908
04JR-TM-023-008	54.395	0.053	1.275	0.767	16.389	23.487	0.105	3.296	0.438	0.000	100.204
04JR-TM-023-011	53.924	0.073	2.230	0.823	14.675	24.162	0.191	3.530	0.796	0.001	100.406
04JR-TM-024-002	55.614	0.056	1.361	0.578	16.760	24.608	0.049	1.039	0.712	0.000	100.777
04JR-TM-027-003	51.943	0.160	3.490	0.779	15.287	23.297	0.114	3.388	0.614	0.000	99.070
04JR-TM-027-006	52.539	0.087	2.011	0.775	13.723	23.594	0.179	5.947	0.746	0.005	99.605
04JR-TM-029-003	53.558	0.048	0.971	0.628	14.777	24.064	0.194	4.971	0.521	0.008	99.740
04JR-TM-039-002	51.176	0.410	4.317	0.876	14.592	22.582	0.125	3.068	1.301	0.000	98.448
04JR-TM-039-003	53.817	0.172	2.209	0.540	15.803	22.830	0.108	2.813	1.070	0.001	99.362
04JR-TM-039-004	52.496	0.063	2.181	0.694	15.235	22.536	0.224	3.919	1.081	0.000	98.428
04JR-TM-039-006	52.664	0.071	2.107	0.571	16.044	23.096	0.123	3.291	0.548	0.000	98.513
04JR-TM-039-007	52.410	0.195	2.447	0.998	15.816	22.460	0.103	3.500	0.711	0.000	98.640
04JR-TM-040-002	53.674	0.147	1.216	0.694	16.449	22.879	0.093	3.302	0.581	0.002	99.036
04JR-TM-041-001	53.948	0.106	1.230	0.661	16.494	22.903	0.102	3.159	0.611	0.002	99.216
04JR-TM-041-002	53.166	0.071	2.026	0.585	16.161	23.066	0.131	3.084	0.577	0.000	98.868
04JR-TM-041-003	53.332	0.436	3.746	0.926	14.840	22.513	0.082	1.974	1.610	0.002	99.461

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-TM-041-004	54.099	0.106	1.430	0.508	16.390	22.800	0.081	3.405	0.580	0.002	99.401
04JR-TM-041-005	54.735	0.082	1.154	0.569	17.027	23.493	0.067	2.321	0.514	0.001	99.964
04JR-TM-041-006	54.236	0.049	1.192	0.944	16.580	23.294	0.086	2.537	0.663	0.002	99.584
04JR-TM-041-007	55.029	0.072	0.340	0.643	17.378	24.235	0.085	1.451	0.384	0.000	99.617
04JR-TM-044-002	53.868	0.014	2.020	0.538	14.308	22.663	0.202	5.646	1.196	0.000	100.456
04JR-TM-051-001	54.120	0.092	0.918	0.621	15.031	23.077	0.182	4.276	1.046	0.000	99.362
04JR-TM-056-001	53.620	0.083	2.083	0.708	13.942	23.092	0.172	5.096	1.146	0.000	99.941
04JR-TM-056-003	54.867	0.092	1.529	0.787	15.478	24.132	0.202	2.351	0.866	0.004	100.308
04JR-TM-065-002	54.741	0.024	1.328	0.622	16.224	22.830	0.111	3.231	0.730	0.002	99.843
04JR-TM-070-002	54.310	0.102	2.272	0.577	15.753	21.616	0.078	4.140	1.168	0.003	100.018
04JR-TM-070-003	54.446	0.025	0.415	0.636	15.670	23.303	0.179	4.329	0.604	0.003	99.610
04JR-TM-071-001	53.874	0.024	0.836	0.869	15.662	22.545	0.162	3.682	1.073	0.000	98.726
CHROMIAN DIOPSIDES (NON KIMBERLITIC)											
($Cr_2O_3 < 0.5$ wt%)											
04JR-MA-001-026	53.828	0.179	1.463	0.436	17.860	21.944	0.106	3.608	0.326	0.007	99.757
04JR-MA-001-036	54.019	0.141	1.400	0.419	18.458	20.985	0.122	3.751	0.325	0.006	99.627
04JR-MA-001-038	53.352	0.174	1.807	0.007	17.554	21.827	0.088	3.422	0.383	0.000	98.612
04JR-MA-001-040	54.166	0.154	1.252	0.000	18.222	22.299	0.093	3.316	0.301	0.002	99.805
04JR-MA-001-046	54.200	0.156	1.193	0.335	18.462	21.527	0.121	3.639	0.264	0.002	99.899
04JR-MA-001-048	53.409	0.207	1.626	0.108	17.534	22.112	0.093	3.664	0.302	0.000	99.053
04JR-MA-001-052	53.442	0.171	1.557	0.485	17.850	21.674	0.083	3.696	0.360	0.000	99.318
04JR-MA-001-072	54.166	0.148	1.138	0.320	17.424	22.664	0.095	3.581	0.346	0.000	99.881
04JR-MA-001-074	55.058	0.000	0.155	0.003	18.587	25.592	0.042	0.185	0.083	0.000	99.705
04JR-MA-002-014	48.075	0.609	4.961	0.004	6.858	19.782	0.230	16.400	2.454	0.002	99.373
04JR-MA-006-002	54.418	0.005	0.712	0.323	15.348	23.445	0.195	4.910	0.624	0.001	99.982
04JR-MA-007-002	54.600	0.010	0.478	0.269	16.315	23.680	0.200	3.782	0.490	0.000	99.824
04JR-MA-007-003	54.007	0.037	0.694	0.452	16.598	23.181	0.130	3.701	0.515	0.000	99.314
04JR-MA-007-004	54.745	0.041	0.274	0.321	17.490	23.915	0.127	2.558	0.276	0.000	99.747
04JR-MA-008-015	55.035	0.015	0.777	0.011	17.209	25.230	0.060	1.540	0.302	0.004	100.182
04JR-MA-009-001	54.289	0.035	0.897	0.369	15.480	23.702	0.179	4.756	0.674	0.000	100.381
04JR-MA-009-002	49.844	1.320	4.188	0.067	13.951	17.684	0.267	11.826	0.760	0.000	99.906
04JR-MA-009-003	50.125	0.602	4.288	0.211	13.750	19.258	0.195	9.617	1.028	0.090	99.163
04JR-MA-009-005	51.400	0.228	3.151	0.056	15.082	19.619	0.243	8.872	0.592	0.001	99.245
04JR-MA-009-006	50.973	0.579	3.695	0.153	13.866	18.922	0.254	10.574	0.640	0.002	99.657
04JR-MA-012-007	54.181	0.126	0.142	0.340	16.163	23.101	0.183	4.653	0.582	0.003	99.474
04JR-MA-012-009	54.425	0.017	0.625	0.495	14.926	23.784	0.191	4.762	0.619	0.001	99.845
04JR-MA-012-010	54.254	0.016	0.481	0.472	15.855	23.908	0.138	3.905	0.541	0.000	99.570
04JR-MA-013-007	54.376	0.014	0.678	0.309	15.799	23.974	0.161	3.929	0.528	0.000	99.768
04JR-MA-016-006	54.650	0.076	0.951	0.132	16.606	24.813	0.058	2.300	0.410	0.000	99.995
04JR-MA-016-008	53.107	0.282	1.807	0.417	16.767	24.385	0.054	2.717	0.222	0.000	99.758
04JR-MA-020-001	54.270	0.018	0.943	0.402	15.528	24.007	0.162	4.124	0.610	0.000	100.063
04JR-MA-020-002	55.050	0.076	0.549	0.405	17.120	24.763	0.161	1.827	0.412	0.001	100.366
04JR-MA-020-003	54.540	0.021	0.737	0.482	15.370	24.136	0.150	4.115	0.651	0.005	100.206
04JR-MA-023-001	54.429	0.022	0.572	0.401	15.946	23.070	0.164	4.599	0.606	0.002	99.809
04JR-MA-024-005	53.616	0.009	0.915	0.464	15.236	23.758	0.181	4.683	0.580	0.000	99.442
04JR-MA-024-007	54.233	0.003	0.928	0.229	15.711	22.609	0.207	5.331	0.638	0.004	99.894
04JR-MA-026-002	54.144	0.032	0.737	0.022	13.531	23.811	0.257	7.479	0.590	0.000	100.603
04JR-MA-026-004	54.719	0.059	0.383	0.030	17.481	24.417	0.150	2.823	0.092	0.000	100.155
04JR-MA-032-001	54.315	0.029	0.257	0.407	16.254	23.695	0.179	3.819	0.582	0.000	99.537
04JR-MA-032-004	54.090	0.021	0.737	0.256	15.534	22.724	0.259	5.453	0.676	0.000	99.750

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-032-006	53.707	0.031	0.690	0.499	14.563	23.849	0.154	5.728	0.476	0.000	99.696
04JR-MA-032-008	54.489	0.020	0.636	0.338	15.902	23.991	0.142	3.859	0.564	0.000	99.940
04JR-MA-034-005	53.700	0.055	1.229	0.482	14.879	23.534	0.164	4.652	0.817	0.002	99.513
04JR-MA-034-006	54.527	0.019	0.648	0.292	16.562	23.342	0.155	3.888	0.506	0.002	99.941
04JR-MA-034-007	54.562	0.013	0.275	0.304	16.108	23.580	0.211	4.300	0.575	0.000	99.927
04JR-MA-034-008	54.500	0.008	0.433	0.382	15.878	24.286	0.164	3.989	0.408	0.001	100.049
04JR-MA-036-001	54.457	0.004	0.398	0.262	15.425	23.886	0.242	4.831	0.502	0.000	100.006
04JR-MA-036-002	54.537	0.022	0.802	0.287	15.480	24.144	0.162	4.287	0.541	0.000	100.262
04JR-MA-036-003	54.383	0.012	0.639	0.273	15.489	24.073	0.183	4.579	0.547	0.000	100.178
04JR-MA-036-004	54.706	0.036	0.577	0.435	15.338	23.916	0.217	4.469	0.594	0.000	100.288
04JR-MA-038-001	54.094	0.021	0.730	0.192	16.291	24.898	0.105	3.196	0.279	0.000	99.805
04JR-MA-046-001	53.461	0.035	1.096	0.491	14.669	24.032	0.142	5.153	0.561	0.000	99.638
04JR-MA-048-001	53.562	0.049	1.385	0.429	14.929	24.106	0.189	4.893	0.475	0.004	100.020
04JR-MA-048-003	54.515	0.040	0.284	0.215	16.624	23.136	0.261	4.284	0.307	0.000	99.664
04JR-MA-051-003	53.746	0.033	0.297	0.204	15.815	23.184	0.268	4.947	0.688	0.000	99.183
04JR-MA-051-004	53.879	0.017	0.987	0.377	15.652	23.769	0.222	3.967	0.697	0.003	99.570
04JR-MA-051-005	53.884	0.025	0.805	0.480	15.848	22.555	0.172	4.567	0.799	0.000	99.134
04JR-MA-051-006	54.086	0.027	0.702	0.244	16.471	24.264	0.177	3.298	0.333	0.000	99.602
04JR-MA-051-007	53.504	0.081	1.692	0.352	16.516	25.297	0.249	1.502	0.215	0.001	99.408
04JR-MA-056-001	53.953	0.016	0.419	0.293	15.727	23.916	0.159	4.414	0.391	0.000	99.289
04JR-MA-056-002	54.181	0.050	0.312	0.463	16.174	24.833	0.094	3.390	0.254	0.000	99.749
04JR-MA-056-003	54.367	0.018	0.354	0.321	16.926	23.274	0.178	3.659	0.431	0.000	99.526
04JR-MA-056-004	54.186	0.011	0.367	0.430	16.082	23.515	0.186	4.196	0.574	0.006	99.553
04JR-MA-056-005	53.913	0.046	0.691	0.230	15.736	23.064	0.194	5.596	0.317	0.005	99.793
04JR-MA-056-006	53.377	0.007	0.828	0.375	14.856	23.683	0.184	5.059	0.651	0.000	99.020
04JR-MA-056-007	54.367	0.015	0.658	0.322	16.022	23.946	0.186	4.653	0.337	0.000	100.507
04JR-MA-056-008	54.180	0.030	1.225	0.377	14.966	23.711	0.171	4.579	0.711	0.006	99.955
04JR-MA-056-009	51.722	0.200	2.820	0.001	12.278	23.417	0.143	9.143	0.675	0.003	100.402
04JR-MA-058-002	54.673	0.102	0.059	0.379	17.315	24.383	0.182	2.291	0.322	0.000	99.705
04JR-MA-058-003	54.533	0.113	0.139	0.380	16.871	23.900	0.185	3.258	0.457	0.004	99.840
04JR-MA-058-005	53.822	0.070	1.640	0.494	15.843	23.100	0.103	4.159	0.585	0.000	99.815
04JR-MA-058-006	54.040	0.026	0.902	0.410	14.756	23.872	0.202	5.100	0.632	0.000	99.940
04JR-MA-060-001	53.572	0.008	0.448	0.482	15.945	23.995	0.154	3.647	0.483	0.000	98.734
04JR-MA-060-003	52.970	0.035	0.974	0.093	13.725	23.909	0.208	7.173	0.567	0.005	99.658
04JR-MA-062-002	54.184	0.086	2.140	0.479	15.148	22.271	0.054	4.254	1.151	0.000	99.767
04JR-MA-062-003	53.945	0.045	0.537	0.067	14.781	24.393	0.232	5.490	0.482	0.001	99.972
04JR-MA-062-005	54.467	0.007	0.136	0.375	16.972	23.538	0.170	3.156	0.432	0.000	99.253
04JR-MA-062-006	54.095	0.058	0.720	0.337	15.290	23.683	0.175	4.823	0.555	0.000	99.736
04JR-MA-062-007	54.249	0.013	0.697	0.000	15.658	23.638	0.156	4.436	0.617	0.000	99.464
04JR-MA-064-001	54.488	0.020	0.311	0.258	16.814	23.086	0.248	3.897	0.386	0.000	99.508
04JR-MA-064-002	54.377	0.066	1.228	0.349	15.801	23.941	0.175	3.428	0.822	0.000	100.185
04JR-MA-064-003	52.270	0.009	1.178	0.199	14.781	23.854	0.177	5.181	0.388	0.000	98.036
04JR-MA-064-004	54.021	0.069	0.929	0.314	15.545	23.270	0.162	4.453	0.748	0.004	99.513
04JR-MA-064-005	53.494	0.038	1.038	0.329	16.844	22.634	0.120	3.724	0.535	0.000	98.756
04JR-MA-065-002	54.577	0.035	0.782	0.466	17.192	25.125	0.072	1.052	0.388	0.001	99.691
04JR-MA-066-001	53.202	0.027	1.573	0.433	14.221	23.251	0.282	5.529	0.929	0.000	99.447
04JR-MA-069-003	53.789	0.023	0.889	0.280	14.896	24.318	0.048	4.902	0.465	0.000	99.610
04JR-MA-069-005	55.826	0.077	1.491	0.395	16.801	24.162	0.055	0.820	1.036	0.002	100.665
04JR-MA-069-007	53.700	0.032	0.547	0.210	16.011	23.503	0.150	4.485	0.420	0.000	99.059
04JR-MA-069-009	53.591	0.015	0.837	0.405	14.179	24.124	0.082	6.179	0.375	0.002	99.789
04JR-MA-070-002	53.765	0.034	0.769	0.332	15.942	23.503	0.207	4.091	0.629	0.004	99.275

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-070-003	53.064	0.001	0.832	0.353	15.369	23.402	0.198	4.881	0.577	0.000	98.678
04JR-MA-071-001	53.328	0.034	0.874	0.443	15.386	23.389	0.183	4.660	0.692	0.001	98.990
04JR-MA-072-001	53.495	0.094	1.836	0.483	15.975	22.799	0.083	4.091	0.791	0.000	99.647
04JR-MA-073-001	53.536	0.011	0.867	0.328	15.983	24.428	0.162	3.308	0.471	0.002	99.095
04JR-MA-073-002	53.728	0.026	1.384	0.365	15.685	23.403	0.184	4.217	0.816	0.000	99.807
04JR-MA-073-004	55.559	0.029	0.053	0.408	18.620	25.350	0.033	0.150	0.177	0.000	100.379
04JR-MA-073-005	54.071	0.030	1.030	0.334	15.020	24.230	0.197	4.287	0.596	0.001	99.794
04JR-MA-075-002	54.299	0.019	1.331	0.272	15.769	24.831	0.019	3.052	0.431	0.002	100.025
04JR-MA-075-003	52.989	0.034	1.616	0.466	14.685	22.926	0.234	4.946	0.990	0.000	98.887
04JR-MA-075-004	55.168	0.016	0.708	0.486	17.744	25.039	0.077	0.327	0.442	0.002	100.008
04JR-MA-077-027	54.508	0.081	0.403	0.000	16.889	24.607	0.158	2.698	0.254	0.001	99.598
04JR-MA-084-001	53.624	0.009	0.301	0.244	16.697	24.351	0.128	3.290	0.215	0.000	98.860
04JR-MA-085-003	54.162	0.017	0.774	0.351	15.422	24.474	0.085	4.091	0.370	0.000	99.747
04JR-MA-086-001	53.251	0.050	2.228	0.462	17.266	19.686	0.145	5.759	0.596	0.002	99.445
04JR-MA-086-002	53.822	0.023	0.790	0.136	15.375	24.012	0.176	4.946	0.378	0.000	99.658
04JR-MA-088-010	52.820	0.036	0.857	0.019	13.846	23.930	0.225	6.785	0.552	0.000	99.070
04JR-MA-090-001	53.951	0.014	0.329	0.173	16.740	24.431	0.136	3.424	0.248	0.000	99.447
04JR-MA-098-002	55.541	0.020	0.039	0.000	18.535	25.845	0.054	0.053	0.025	0.000	100.111
04JR-MA-098-003	55.309	0.038	0.188	0.000	18.283	25.400	0.165	0.741	0.070	0.000	100.194
04JR-MA-098-004	54.674	0.055	0.960	0.003	17.516	25.397	0.199	0.755	0.219	0.000	99.778
04JR-MA-099-001	53.996	0.020	0.993	0.432	15.765	23.086	0.171	4.449	0.605	0.000	99.517
04JR-MA-101-011	54.361	0.064	0.745	0.386	15.952	23.197	0.195	4.079	0.677	0.000	99.656
04JR-MA-103-001	54.107	0.033	0.862	0.459	15.754	22.281	0.205	5.805	0.692	0.000	100.198
04JR-MA-104-001	53.477	0.015	1.094	0.244	15.420	23.887	0.213	4.227	0.577	0.000	99.154
04JR-MA-106-001	53.631	0.045	1.400	0.295	15.028	23.908	0.177	5.027	0.581	0.000	100.092
04JR-MA-106-002	53.788	0.041	1.760	0.313	14.836	22.579	0.226	4.679	1.329	0.003	99.554
04JR-MA-107-003	54.794	0.066	0.615	0.447	16.407	23.210	0.106	2.770	1.200	0.000	99.615
04JR-MA-107-004	54.670	0.037	0.510	0.003	16.508	24.955	0.061	2.936	0.412	0.000	100.091
04JR-MA-109-004	54.518	0.031	0.734	0.388	17.092	23.889	0.118	2.679	0.277	0.000	99.726
04JR-MA-109-005	54.180	0.023	1.241	0.287	14.628	22.958	0.231	5.479	0.939	0.000	99.966
04JR-MA-109-006	55.210	0.038	0.121	0.023	17.776	25.731	0.047	0.860	0.128	0.000	99.933
04JR-MA-109-007	55.302	0.189	0.122	0.012	18.461	25.501	0.032	0.548	0.043	0.001	100.211
04JR-MA-109-008	54.822	0.008	0.207	0.000	17.123	25.634	0.057	1.520	0.018	0.002	99.391
04JR-MA-109-009	55.503	0.173	0.064	0.008	18.341	25.476	0.023	0.619	0.044	0.001	100.252
04JR-MA-109-010	52.706	0.026	1.132	0.052	12.118	23.456	0.183	9.575	0.634	0.000	99.884
04JR-MA-110-001	54.379	0.057	2.202	0.436	15.292	21.850	0.087	4.276	1.302	0.000	99.880
04JR-MA-114-036	53.757	0.021	1.585	0.166	14.411	23.017	0.253	5.329	1.055	0.000	99.593
04JR-MA-114-037	54.272	0.055	1.020	0.353	15.737	22.641	0.141	4.897	0.549	0.000	99.663
04JR-MA-114-039	54.233	0.017	0.335	0.297	16.347	23.584	0.146	4.203	0.403	0.000	99.563
04JR-MA-114-041	54.571	0.046	0.941	0.313	16.185	23.540	0.162	3.729	0.670	0.000	100.158
04JR-MA-114-043	52.768	0.070	3.671	0.475	13.894	21.704	0.237	5.851	1.102	0.002	99.774
04JR-MA-115-004	55.007	0.080	0.498	0.422	17.456	24.969	0.077	1.380	0.310	0.002	100.201
04JR-MA-115-005	54.674	0.107	0.490	0.415	17.340	24.956	0.066	1.132	0.280	0.000	99.458
04JR-MA-116-001	54.462	0.016	0.668	0.458	16.261	24.187	0.135	3.601	0.345	0.000	100.131
04JR-MA-117-003	52.089	0.086	1.597	0.009	13.144	24.161	0.112	7.844	0.297	0.003	99.341
04JR-MA-117-004	47.812	3.563	10.444	0.001	12.741	21.767	0.036	1.537	1.969	0.007	99.876
04JR-MA-117-005	51.350	2.247	6.245	0.033	14.350	21.862	0.074	1.715	1.944	0.000	99.819
04JR-MA-117-006	50.980	1.924	7.087	0.007	14.237	22.176	0.049	1.812	1.715	0.000	99.986
04JR-MA-117-007	48.254	3.292	9.615	0.006	12.959	21.914	0.047	1.814	1.841	0.000	99.742
04JR-MA-117-008	48.869	3.133	9.257	0.000	13.188	21.991	0.038	1.750	1.907	0.000	100.132
04JR-MA-120-001	54.397	0.008	0.803	0.306	15.494	23.882	0.149	4.172	0.600	0.000	99.811

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-122-003	53.944	0.023	1.926	0.398	14.696	22.401	0.235	4.898	1.291	0.000	99.811
04JR-MA-123-027	53.953	0.065	1.783	0.449	16.506	23.026	0.124	3.290	0.631	0.000	99.826
04JR-MA-123-028	53.917	0.032	1.675	0.003	15.535	23.732	0.152	3.895	0.868	0.000	99.808
04JR-MA-126-001	54.183	0.055	0.933	0.399	15.651	23.036	0.193	4.514	0.849	0.000	99.813
04JR-MA-127-001	53.100	0.079	1.745	0.363	16.250	22.391	0.139	4.233	0.552	0.000	98.851
04JR-MA-127-002	54.293	0.009	1.594	0.426	15.030	22.950	0.179	4.749	0.973	0.002	100.203
04JR-MA-127-003	53.672	0.041	1.421	0.398	16.102	23.001	0.120	3.853	0.603	0.000	99.211
04JR-MA-130-002	53.931	0.011	0.605	0.401	14.591	23.422	0.136	6.008	0.541	0.000	99.646
04JR-MA-130-003	54.531	0.048	0.344	0.105	16.147	24.024	0.199	4.337	0.345	0.004	100.084
04JR-MA-130-004	53.399	0.087	2.260	0.258	14.769	22.916	0.158	4.612	0.979	0.001	99.439
04JR-MA-130-006	54.407	0.087	1.438	0.476	15.396	22.961	0.129	4.480	0.811	0.000	100.185
04JR-MA-130-007	54.821	0.028	0.252	0.000	17.373	24.228	0.201	2.648	0.307	0.005	99.863
04JR-MA-130-008	54.478	0.021	0.695	0.000	16.798	23.373	1.185	2.382	0.486	0.000	99.417
04JR-MA-130-009	54.823	0.030	0.632	0.000	15.556	24.904	0.046	4.182	0.239	0.003	100.416
04JR-MA-131-002	51.481	0.052	1.210	0.014	10.494	24.045	0.101	12.377	0.115	0.002	99.892
04JR-MA-132-001	54.635	0.082	0.672	0.000	17.452	25.193	0.079	1.759	0.112	0.000	99.984
04JR-MA-135-001	54.284	0.045	0.749	0.468	16.025	24.344	0.130	3.247	0.417	0.000	99.709
04JR-MA-136-005	53.743	0.032	0.672	0.296	15.190	24.229	0.220	4.734	0.410	0.001	99.528
04JR-MA-136-006	54.876	0.041	0.227	0.192	16.496	24.275	0.171	3.341	0.196	0.000	99.814
04JR-MA-136-008	54.059	0.031	0.977	0.353	14.711	23.171	0.195	5.285	0.918	0.000	99.699
04JR-MA-136-009	53.644	0.074	1.012	0.406	15.598	24.256	0.138	4.208	0.463	0.001	99.798
04JR-MA-136-010	54.200	0.019	0.729	0.137	14.914	23.090	0.267	5.571	0.643	0.001	99.571
04JR-MA-136-012	53.998	0.038	0.862	0.269	16.016	23.536	0.200	3.654	0.690	0.005	99.266
04JR-MA-138-001	54.082	0.022	0.649	0.316	14.673	23.412	0.231	5.668	0.497	0.000	99.550
04JR-MA-138-003	54.492	0.014	0.670	0.486	15.100	23.330	0.163	5.258	0.654	0.000	100.166
04JR-MA-140-006	54.623	0.015	0.636	0.331	15.952	23.331	0.166	4.567	0.356	0.001	99.977
04JR-MA-140-008	54.757	0.013	0.372	0.423	15.593	23.475	0.212	4.709	0.467	0.000	100.020
04JR-MA-140-009	54.101	0.002	0.649	0.481	14.506	22.878	0.259	6.165	0.747	0.000	99.788
04JR-MA-140-012	54.856	0.007	0.639	0.404	15.806	23.698	0.144	3.879	0.573	0.000	100.006
04JR-MA-140-013	53.560	0.011	0.436	0.315	14.662	23.143	0.311	6.361	0.469	0.000	99.269
04JR-MA-141-001	54.625	0.010	0.982	0.419	15.408	23.731	0.162	4.276	0.651	0.002	100.267
04JR-MA-141-008	53.604	0.015	1.018	0.434	15.032	23.486	0.171	4.529	0.632	0.000	98.921
04JR-MA-141-009	53.697	0.012	0.898	0.441	15.451	23.670	0.143	4.095	0.685	0.003	99.095
04JR-MA-141-010	54.329	0.010	0.345	0.439	16.896	24.022	0.164	2.587	0.455	0.001	99.249
04JR-MA-141-011	54.319	0.004	0.542	0.494	16.161	24.101	0.137	3.242	0.466	0.000	99.466
04JR-MA-141-012	53.872	0.014	0.577	0.469	16.099	23.070	0.187	4.292	0.580	0.000	99.160
04JR-MA-142-006	53.450	0.016	0.373	0.443	16.745	23.594	0.136	3.155	0.379	0.000	98.291
04JR-MA-142-007	53.565	0.028	1.052	0.411	15.393	23.580	0.141	4.004	0.635	0.000	98.808
04JR-MA-142-008	53.140	0.026	0.391	0.429	15.037	23.568	0.171	4.825	0.642	0.001	98.229
04JR-MA-142-009	53.808	0.018	0.799	0.391	15.013	23.563	0.221	5.234	0.636	0.000	99.682
04JR-MA-142-011	53.227	0.021	0.751	0.391	15.700	23.349	0.155	4.630	0.529	0.001	98.754
04JR-MA-143-003	52.920	0.014	0.674	0.428	14.985	23.712	0.185	4.992	0.544	0.005	98.459
04JR-MA-143-004	53.641	0.006	0.684	0.449	16.091	23.051	0.131	3.844	0.585	0.003	98.485
04JR-MA-143-006	53.253	0.000	0.670	0.494	15.056	23.142	0.198	5.293	0.632	0.000	98.737
04JR-MA-143-007	53.373	0.031	0.199	0.484	16.596	24.139	0.133	2.835	0.459	0.000	98.250
04JR-MA-143-015	54.047	0.010	0.789	0.324	15.386	23.379	0.156	4.427	0.668	0.000	99.187
04JR-MA-143-016	54.162	0.042	0.381	0.265	16.562	24.263	0.184	3.351	0.440	0.000	99.649
04JR-MA-143-017	53.528	0.033	0.624	0.008	17.054	24.564	0.107	2.265	0.198	0.014	98.396
04JR-MA-144-001	54.325	0.009	0.880	0.472	15.013	23.399	0.180	4.869	0.669	0.000	99.815
04JR-MA-145-001	53.312	0.030	0.738	0.304	14.731	24.039	0.161	5.431	0.330	0.000	99.075
04JR-MA-148-003	53.617	0.070	2.178	0.435	15.425	22.172	0.079	4.021	1.211	0.001	99.208

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-MA-149-002	**53.656**	**0.033**	**1.472**	**0.437**	**14.694**	**23.001**	**0.214**	**4.826**	**0.990**	**0.005**	**99.327**
04JR-MA-149-003	**51.782**	**0.162**	**2.454**	**0.000**	**16.816**	**25.500**	**0.045**	**1.698**	**0.022**	**0.002**	**98.482**
04JR-MA-150-024	53.525	0.035	1.125	0.477	14.604	23.379	0.258	5.630	0.592	0.000	99.626
04JR-MA-154-001	51.790	0.347	3.909	0.000	14.329	23.867	0.069	3.610	0.717	0.000	98.638
04JR-MA-160-002	54.203	0.040	2.077	0.476	14.409	22.215	0.196	5.013	1.353	0.000	99.981
04JR-MA-160-006	53.637	0.011	0.919	0.334	15.066	23.544	0.205	5.167	0.421	0.006	99.310
04JR-SG-004-002	54.493	0.034	0.818	0.142	15.634	23.731	0.174	4.226	0.827	0.000	100.078
04JR-SG-004-004	54.201	0.020	1.097	0.233	15.844	23.754	0.107	4.200	0.685	0.000	100.141
04JR-SG-004-006	54.117	0.034	0.898	0.198	15.687	24.357	0.180	3.991	0.602	0.000	100.063
04JR-SG-007-001	**53.636**	**0.074**	**0.773**	**0.385**	**15.169**	**23.131**	**0.182**	**4.963**	**1.127**	**0.000**	**99.439**
04JR-SG-007-002	**53.798**	**0.055**	**0.326**	**0.389**	**15.919**	**24.034**	**0.219**	**4.321**	**0.455**	**0.000**	**99.517**
04JR-SG-007-003	**55.016**	**0.042**	**0.834**	**0.364**	**17.112**	**24.788**	**0.028**	**1.350**	**0.565**	**0.000**	**100.098**
04JR-SG-007-005	**53.844**	**0.040**	**1.307**	**0.480**	**15.867**	**22.935**	**0.157**	**4.237**	**0.624**	**0.000**	**99.491**
04JR-SG-007-007	**53.888**	**0.054**	**1.309**	**0.288**	**15.355**	**23.196**	**0.208**	**4.711**	**0.747**	**0.001**	**99.757**
04JR-SG-008-001	54.254	0.020	1.206	0.115	15.970	24.778	0.138	3.113	0.581	0.000	100.173
04JR-SG-008-003	54.632	0.042	0.972	0.471	16.263	24.566	0.046	2.602	0.632	0.000	100.227
04JR-SG-008-004	53.444	0.038	0.958	0.000	14.544	24.505	0.149	5.891	0.369	0.007	99.905
04JR-SG-008-005	54.059	0.111	0.160	0.353	16.770	24.805	0.105	2.880	0.235	0.000	99.479
04JR-SG-008-006	51.554	0.184	5.688	0.311	17.109	17.082	0.157	5.660	1.222	0.294	99.261
04JR-SG-010-005	**54.248**	**0.021**	**0.552**	**0.265**	**15.119**	**24.299**	**0.154**	**5.152**	**0.392**	**0.000**	**100.203**
04JR-SG-011-013	53.798	0.042	0.656	0.407	14.930	24.194	0.213	5.289	0.450	0.000	99.979
04JR-SG-011-015	54.373	0.057	1.117	0.499	16.865	24.272	0.089	2.319	0.539	0.000	100.130
04JR-SG-011-019	54.983	0.053	0.955	0.474	16.679	24.731	0.052	2.019	0.617	0.000	100.563
04JR-SG-011-020	53.979	0.100	2.153	0.418	16.404	24.152	0.099	2.595	0.725	0.000	100.625
04JR-SG-011-022	54.886	0.049	0.798	0.445	17.016	24.843	0.079	1.293	0.498	0.000	99.907
04JR-SG-011-023	54.432	0.088	1.573	0.460	16.590	23.799	0.106	2.146	0.781	0.002	99.978
04JR-SG-011-025	54.555	0.085	1.109	0.368	17.924	24.889	0.074	1.041	0.182	0.000	100.226
04JR-SG-011-027	55.173	0.022	0.677	0.486	17.875	25.457	0.016	0.267	0.332	0.000	100.304
04JR-SG-011-029	54.141	0.024	0.453	0.329	15.168	24.514	0.193	4.490	0.389	0.000	99.700
04JR-SG-011-035	53.830	0.041	2.418	0.388	15.652	22.095	0.134	4.511	1.032	0.000	100.099
04JR-SG-011-036	55.277	0.097	0.795	0.178	18.087	25.185	0.019	0.074	0.343	0.000	100.055
04JR-SG-011-038	53.775	0.039	0.550	0.446	17.371	24.742	0.085	1.360	0.454	0.001	98.824
04JR-SG-011-040	54.171	0.040	0.882	0.222	17.137	25.078	0.122	1.064	0.341	0.000	99.057
04JR-SG-011-041	53.581	0.118	1.488	0.494	16.616	24.045	0.107	2.494	0.556	0.003	99.501
04JR-SG-011-043	55.149	0.074	0.493	0.413	17.601	25.041	0.071	1.191	0.342	0.002	100.377
04JR-SG-011-044	54.790	0.071	0.539	0.425	17.226	25.020	0.068	1.463	0.395	0.002	99.997
04JR-SG-011-046	53.855	0.148	1.507	0.287	16.851	24.572	0.087	1.923	0.444	0.000	99.673
04JR-SG-012-002	53.927	0.010	0.677	0.416	15.618	23.548	0.289	4.752	0.706	0.000	99.943
04JR-SG-012-004	53.030	0.028	0.795	0.018	13.111	23.640	0.286	7.969	0.680	0.000	99.557
04JR-SG-013-001	54.562	0.034	0.596	0.308	17.473	24.482	0.110	1.899	0.438	0.002	99.903
04JR-SG-013-003	54.735	0.068	0.352	0.315	18.070	24.932	0.079	1.255	0.275	0.004	100.084
04JR-SG-013-005	54.688	0.064	0.464	0.468	18.153	24.824	0.073	0.739	0.328	0.000	99.800
04JR-SG-013-006	53.659	0.037	1.012	0.387	15.808	23.762	0.131	3.870	0.541	0.000	99.207
04JR-SG-013-010	54.101	0.074	2.261	0.433	16.406	21.605	0.129	3.983	1.026	0.000	100.016
04JR-SG-013-013	54.031	0.043	1.583	0.440	16.179	23.075	0.113	3.573	0.790	0.004	99.832
04JR-SG-013-016	54.546	0.075	0.442	0.429	17.468	24.684	0.107	1.996	0.270	0.000	100.016
04JR-SG-013-018	54.750	0.037	0.279	0.409	18.036	24.452	0.098	1.547	0.406	0.000	100.013
04JR-SG-013-020	53.322	0.033	1.141	0.361	15.668	23.254	0.249	4.095	0.894	0.002	99.019
04JR-SG-013-023	54.656	0.133	0.296	0.481	17.875	24.758	0.090	1.232	0.332	0.001	99.852
04JR-SG-013-024	54.848	0.060	0.560	0.299	17.733	24.857	0.072	1.163	0.403	0.004	99.998
04JR-SG-013-027	55.144	0.091	0.310	0.407	17.898	24.801	0.079	1.369	0.299	0.005	100.403

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-SG-013-028	54.483	0.091	0.410	0.293	17.711	24.719	0.064	1.426	0.256	0.000	99.453
04JR-SG-014-002	53.885	0.039	1.123	0.419	15.358	24.358	0.124	4.435	0.383	0.000	100.124
04JR-SG-014-003	53.742	0.005	0.728	0.358	14.727	24.375	0.208	5.641	0.343	0.000	100.126
04JR-SG-014-004	52.949	0.010	0.622	0.342	14.854	23.888	0.263	5.651	0.338	0.000	98.918
04JR-SG-014-005	53.573	0.067	0.654	0.390	14.813	23.819	0.137	5.656	0.437	0.000	99.544
04JR-SG-015-001	55.136	0.051	0.538	0.477	18.127	24.917	0.074	0.763	0.352	0.000	100.435
04JR-SG-015-002	54.955	0.060	0.277	0.496	17.873	24.490	0.105	1.393	0.412	0.004	100.064
04JR-SG-015-005	54.473	0.074	1.216	0.350	16.586	25.333	0.023	1.997	0.341	0.001	100.392
04JR-SG-015-006	55.077	0.015	0.537	0.261	17.458	25.045	0.009	0.718	0.511	0.000	99.632
04JR-SG-015-007	55.058	0.058	0.303	0.422	18.227	25.030	0.060	0.709	0.280	0.000	100.145
04JR-SG-015-016	53.963	0.041	1.607	0.434	16.502	23.136	0.101	3.445	0.662	0.000	99.891
04JR-SG-015-018	54.860	0.054	1.375	0.468	17.691	25.566	0.051	0.239	0.330	0.004	100.638
04JR-SG-015-020	54.279	0.041	0.732	0.349	15.848	23.753	0.194	4.199	0.613	0.002	100.011
04JR-SG-015-022	54.464	0.104	2.138	0.416	16.767	23.832	0.116	1.720	0.773	0.000	100.329
04JR-SG-015-023	53.310	0.030	0.782	0.282	13.755	24.796	0.272	6.522	0.267	0.000	100.015
04JR-SG-015-024	55.047	0.052	0.355	0.342	17.942	24.416	0.084	1.247	0.400	0.000	99.884
04JR-SG-015-025	55.282	0.061	0.532	0.389	17.767	25.010	0.106	1.141	0.428	0.000	100.716
04JR-SG-015-027	54.490	0.065	1.743	0.472	16.437	23.725	0.085	2.257	1.001	0.000	100.275
04JR-SG-015-031	54.732	0.061	0.464	0.486	17.788	24.756	0.108	1.052	0.437	0.004	99.888
04JR-SG-015-032	54.098	0.034	0.743	0.479	17.215	24.859	0.086	1.634	0.440	0.002	99.590
04JR-SG-015-035	54.127	0.072	0.950	0.397	17.051	24.717	0.078	1.477	0.518	0.000	99.386
04JR-SG-015-036	53.952	0.185	2.771	0.441	15.639	23.501	0.093	1.920	1.108	0.000	99.609
04JR-SG-015-038	54.411	0.034	0.592	0.407	17.507	24.129	0.101	1.937	0.335	0.003	99.454
04JR-SG-015-039	54.881	0.019	0.471	0.247	17.309	25.358	0.068	1.384	0.299	0.000	100.035
04JR-TM-001-002	52.806	0.000	0.550	0.457	16.196	22.676	0.172	4.852	0.484	0.006	98.199
04JR-TM-001-003	53.434	0.018	0.496	0.425	16.195	22.849	0.209	4.300	0.589	0.000	98.516
04JR-TM-003-001	53.242	0.013	0.558	0.408	15.688	22.960	0.180	4.453	0.730	0.000	98.231
04JR-TM-005-004	53.051	0.000	0.214	0.259	16.451	23.445	0.151	3.817	0.347	0.004	97.740
04JR-TM-012-001	52.774	0.046	1.527	0.391	15.689	20.488	0.172	6.493	0.627	0.000	98.208
04JR-TM-015-002	52.323	0.012	0.915	0.438	15.898	24.339	0.135	3.238	0.328	0.006	97.632
04JR-TM-016-001	53.429	0.025	0.498	0.381	16.460	24.068	0.122	2.856	0.483	0.000	98.323
04JR-TM-016-002	53.092	0.043	0.746	0.336	15.870	23.992	0.148	3.424	0.677	0.000	98.328
04JR-TM-018-004	53.917	0.037	0.753	0.219	16.162	24.678	0.178	3.019	0.382	0.000	99.345
04JR-TM-018-005	52.781	0.010	0.703	0.298	15.112	23.375	0.244	5.410	0.363	0.004	98.299
04JR-TM-023-001	52.515	0.039	1.395	0.469	14.595	21.538	0.262	6.600	0.796	0.001	98.210
04JR-TM-023-002	54.297	0.066	0.098	0.253	17.376	24.071	0.162	2.766	0.118	0.002	99.209
04JR-TM-023-004	53.746	0.022	0.738	0.320	15.276	23.114	0.204	4.984	0.851	0.000	99.254
04JR-TM-023-005	53.904	0.018	0.222	0.190	17.019	24.100	0.225	3.248	0.171	0.003	99.099
04JR-TM-023-006	53.559	0.076	1.450	0.399	16.200	23.451	0.160	4.380	0.339	0.001	100.014
04JR-TM-023-007	54.148	0.036	0.884	0.276	15.948	24.059	0.132	3.271	0.523	0.000	99.276
04JR-TM-023-009	54.264	0.020	0.571	0.194	15.698	24.328	0.198	4.130	0.432	0.000	99.834
04JR-TM-023-010	54.690	0.023	0.336	0.198	16.201	24.336	0.173	3.524	0.234	0.000	99.715
04JR-TM-023-012	53.452	0.050	0.377	0.218	16.629	22.810	0.219	3.889	0.623	0.000	98.266
04JR-TM-023-013	53.819	0.036	0.682	0.270	16.067	23.671	0.195	3.875	0.519	0.000	99.135
04JR-TM-023-014	54.512	0.018	1.199	0.276	17.080	25.201	0.023	0.879	0.458	0.000	99.645
04JR-TM-023-015	53.947	0.090	0.484	0.392	16.124	24.290	0.161	3.376	0.420	0.000	99.284
04JR-TM-023-016	54.084	0.068	1.542	0.311	16.735	23.523	0.137	2.876	0.423	0.000	99.699
04JR-TM-025-001	53.129	0.056	0.678	0.248	15.697	24.223	0.168	3.764	0.525	0.000	98.489
04JR-TM-026-001	53.677	0.025	0.294	0.419	16.456	23.880	0.244	3.146	0.441	0.000	98.581
04JR-TM-026-002	54.644	0.029	0.241	0.002	18.468	25.028	0.059	0.504	0.132	0.000	99.106
04JR-TM-027-001	53.784	0.037	0.795	0.255	15.683	24.512	0.141	3.778	0.366	0.001	99.351

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	Na_2O	K_2O	TOTAL
04JR-TM-027-002	53.950	0.018	0.986	0.298	16.644	25.475	0.020	1.773	0.305	0.000	99.470
04JR-TM-027-004	54.343	0.017	1.029	0.271	16.196	24.227	0.035	2.753	0.697	0.003	99.572
04JR-TM-027-005	53.450	0.006	0.844	0.174	14.810	23.833	0.157	5.690	0.398	0.000	99.361
04JR-TM-029-004	55.007	0.004	0.333	0.000	18.160	25.254	0.032	0.617	0.190	0.000	99.598
04JR-TM-029-005	54.386	0.000	0.423	0.006	16.628	25.064	0.158	2.859	0.108	0.000	99.633
04JR-TM-034-001	54.107	0.104	0.685	0.486	16.902	24.446	0.115	2.029	0.309	0.002	99.184
04JR-TM-034-002	53.393	0.073	2.047	0.425	15.741	23.087	0.102	3.867	0.602	0.001	99.337
04JR-TM-034-003	54.426	0.029	0.338	0.409	17.642	24.023	0.067	1.943	0.385	0.000	99.262
04JR-TM-035-001	53.307	0.085	1.969	0.365	15.826	22.783	0.107	4.193	0.753	0.000	99.388
04JR-TM-035-002	52.131	0.172	3.114	0.470	15.764	24.442	0.095	2.700	0.442	0.000	99.331
04JR-TM-035-003	53.472	0.099	1.436	0.480	15.620	22.732	0.140	4.634	0.641	0.006	99.259
04JR-TM-035-004	54.139	0.029	0.978	0.414	15.151	23.176	0.192	4.541	0.992	0.000	99.612
04JR-TM-039-001	54.453	0.024	0.379	0.393	17.241	24.841	0.096	1.692	0.309	0.000	99.428
04JR-TM-039-005	53.601	0.038	1.061	0.314	15.588	23.168	0.184	4.237	0.675	0.000	98.865
04JR-TM-039-008	53.160	0.041	1.137	0.396	15.369	22.910	0.217	5.024	0.624	0.003	98.880
04JR-TM-040-001	55.112	0.048	0.781	0.281	17.008	24.145	0.087	1.864	0.555	0.000	99.879
04JR-TM-042-001	55.197	0.049	1.184	0.245	17.192	24.977	0.034	0.373	0.611	0.000	99.861
04JR-TM-043-001	54.635	0.080	0.428	0.362	17.760	24.498	0.087	1.449	0.283	0.000	99.581
04JR-TM-043-002	55.077	0.055	0.300	0.460	17.874	24.303	0.131	1.207	0.389	0.000	99.797
04JR-TM-043-003	54.801	0.061	0.485	0.299	17.392	24.566	0.079	1.419	0.314	0.000	99.414
04JR-TM-043-004	55.555	0.112	0.673	0.310	17.093	24.463	0.080	1.129	0.601	0.000	100.015
04JR-TM-043-005	53.937	0.087	1.720	0.375	15.599	23.329	0.106	4.202	0.563	0.000	99.918
04JR-TM-043-006	54.137	0.046	1.436	0.284	15.701	24.491	0.126	3.123	0.463	0.002	99.810
04JR-TM-044-001	54.157	0.071	2.053	0.367	15.051	23.015	0.144	4.457	1.063	0.000	100.377
04JR-TM-046-003	54.217	0.015	0.615	0.139	15.184	24.426	0.138	4.835	0.387	0.000	99.955
04JR-TM-056-002	55.008	0.052	0.332	0.366	16.907	24.162	0.132	2.899	0.328	0.000	100.185
04JR-TM-061-001	51.885	0.695	3.154	0.006	12.639	23.383	0.102	7.162	0.774	0.001	99.799
04JR-TM-063-002	54.813	0.052	0.675	0.333	15.965	24.230	0.157	3.636	0.492	0.001	100.354
04JR-TM-065-001	54.860	0.019	0.938	0.406	16.070	24.246	0.097	3.431	0.316	0.000	100.383
04JR-TM-067-003	55.106	0.003	0.555	0.282	16.261	23.757	0.152	3.478	0.434	0.000	100.028
04JR-TM-067-004	54.424	0.036	0.093	0.000	17.178	24.524	0.317	2.399	0.181	0.000	99.152
04JR-TM-067-005	54.659	0.017	0.548	0.006	16.780	25.312	0.032	2.141	0.210	0.000	99.704
04JR-TM-067-006	54.461	0.099	0.378	0.000	17.176	24.815	0.142	2.471	0.130	0.000	99.672
04JR-TM-069-002	51.523	0.814	3.688	0.000	14.108	23.796	0.061	4.658	0.735	0.000	99.384
04JR-TM-069-003	49.967	1.096	3.979	0.009	11.879	23.305	0.131	7.796	0.818	0.004	98.982
04JR-TM-069-004	50.993	0.727	3.565	0.001	13.071	23.661	0.080	6.545	0.693	0.000	99.336
04JR-TM-069-005	51.209	0.685	3.127	0.002	12.184	23.405	0.099	7.892	0.850	0.002	99.456
04JR-TM-070-004	54.473	0.022	0.227	0.320	16.960	23.451	0.138	3.531	0.317	0.002	99.441
04JR-TM-074-001	54.126	0.030	0.845	0.013	15.706	24.744	0.139	3.554	0.426	0.000	99.583

Sample	SiO_2	TiO_2	Nb_2O_5	Al_2O_3	Cr_2O_3	V_2O_5	MgO	MnO	FeO*	NiO	ZnO	Total	Fe_2O_3	FeO	Total
CRUSTAL ILMENITES															
04JR-MA-002-007	0.396	47.667	0.000	0.124	0.033	0.000	0.483	1.161	47.910	0.039	0.007	97.818	7.392	41.258	98.559
04JR-MA-004-001	0.004	48.157	0.042	0.049	0.041	0.044	0.400	0.507	49.727	0.008	0.016	98.993	8.393	42.175	99.834
04JR-MA-005-001	0.022	48.429	0.043	0.027	0.046	0.107	0.487	0.331	49.672	0.000	0.030	99.193	7.900	42.564	99.985
04JR-MA-005-002	0.000	49.152	0.000	0.019	0.009	0.000	0.380	0.344	49.613	0.000	0.038	99.555	7.192	43.142	100.275
04JR-MA-008-007	0.000	49.161	0.016	0.047	0.035	0.000	0.431	1.039	48.527	0.009	0.023	99.288	6.834	42.377	99.972
04JR-MA-008-008	0.005	50.727	0.000	0.012	0.057	0.000	0.122	1.286	47.874	0.005	0.044	100.131	4.239	44.059	100.556
04JR-MA-008-009	0.002	49.126	0.000	0.050	0.045	0.000	0.232	0.479	48.920	0.000	0.003	98.857	6.271	43.277	99.485
04JR-MA-008-010	0.018	49.708	0.000	0.034	0.056	0.168	0.479	0.620	48.484	0.001	0.018	99.586	5.552	43.488	100.142
04JR-MA-008-011	0.000	47.711	0.020	0.035	0.034	0.000	0.404	0.598	50.260	0.005	0.011	99.078	9.639	41.586	100.044
04JR-MA-008-012	0.008	49.866	0.006	0.033	0.022	0.000	0.891	0.347	48.642	0.000	0.016	99.831	6.374	42.906	100.469
04JR-MA-008-013	0.000	48.447	0.036	0.044	0.012	0.000	0.504	0.587	49.730	0.000	0.002	99.362	8.467	42.111	100.210
04JR-MA-008-014	0.006	49.932	0.000	0.054	0.084	0.074	0.986	0.550	48.024	0.004	0.014	99.728	5.920	42.697	100.321
04JR-MA-017-001	0.012	46.470	0.036	0.045	0.017	0.000	0.977	0.924	50.290	0.003	0.031	98.804	12.399	39.134	100.047
04JR-MA-017-002	0.020	48.335	0.000	0.044	0.024	0.000	0.452	0.403	50.013	0.000	0.000	99.292	8.599	42.276	100.153
04JR-MA-024-001	0.000	47.750	0.000	0.028	0.032	0.000	0.577	0.507	50.406	0.007	0.004	99.310	10.021	41.389	100.314
04JR-MA-077-024	0.005	50.429	0.014	0.019	0.034	0.000	0.276	1.232	47.747	0.000	0.024	99.780	4.602	43.606	100.241
04JR-MA-077-025	0.002	50.247	0.000	0.024	0.007	0.000	0.417	0.842	48.553	0.009	0.004	100.104	5.527	43.580	100.658
04JR-MA-077-026	0.000	48.660	0.121	0.064	0.080	0.133	0.606	0.187	49.786	0.005	0.013	99.655	7.748	42.814	100.432
04JR-MA-107-001	0.002	52.457	0.000	0.036	0.002	0.000	0.308	1.039	46.610	0.000	0.016	100.470	1.167	45.561	100.587
04JR-MA-114-033	0.001	51.272	0.044	0.022	0.015	0.000	0.299	0.670	47.624	0.006	0.013	99.964	2.999	44.925	100.264
04JR-MA-114-034	0.000	50.885	0.000	0.019	0.019	0.000	0.566	1.130	47.764	0.000	0.001	100.384	4.622	43.605	100.847
04JR-MA-125-001	0.000	51.977	0.212	0.013	0.030	0.000	0.045	1.194	46.124	0.008	0.028	99.632	0.531	45.647	99.685
04JR-MA-125-002	0.002	51.965	0.075	0.024	0.000	0.000	0.079	1.604	45.808	0.000	0.034	99.591	0.878	45.019	99.679
04JR-MA-129-001	0.003	49.761	0.250	0.021	0.019	0.000	0.187	1.707	47.881	0.005	0.080	99.914	5.554	42.884	100.471
04JR-MA-140-001	0.000	48.531	0.025	0.020	0.428	0.637	0.743	0.273	48.632	0.002	0.011	99.303	6.190	43.063	99.923
04JR-MA-140-002	0.023	49.539	0.000	0.032	0.042	0.000	0.905	0.525	47.900	0.005	0.011	98.980	6.092	42.418	99.590
04JR-MA-140-003	0.030	51.268	0.027	0.039	0.001	0.000	0.979	0.320	47.300	0.000	0.000	99.965	3.557	44.099	100.321
04JR-MA-140-004	0.017	48.061	0.014	0.034	0.028	0.000	0.100	0.724	50.135	0.000	0.023	99.134	8.684	42.321	100.004
04JR-MA-140-005	0.000	49.073	0.000	0.035	0.048	0.000	0.382	0.489	49.072	0.005	0.018	99.123	6.825	42.931	99.806
04JR-MA-155-001	0.001	50.907	0.000	0.011	0.075	0.000	0.186	1.535	46.901	0.000	0.044	99.659	3.385	43.855	99.998
04JR-SG-009-002	0.001	50.395	0.121	0.034	0.012	0.000	0.109	2.215	46.307	0.013	0.079	99.285	3.753	42.929	99.661
04JR-TM-046-002	0.019	50.066	0.000	0.011	0.026	0.000	0.214	1.050	48.114	0.000	0.025	99.525	5.042	43.578	100.031
04JR-TM-046-003	0.013	48.626	0.067	0.018	0.020	0.000	0.545	2.061	47.950	0.009	0.028	99.338	8.033	40.721	100.143
04JR-TM-067-002	0.013	49.662	0.000	0.025	0.018	0.000	0.393	0.791	48.134	0.007	0.019	99.063	5.541	43.148	99.618

Sample	SiO_2	TiO_2	Al_2O_3	Cr_2O_3	MgO	CaO	MnO	FeO	CoO	NiO	Total
OLIVINE FROM FELSIC SOURCES											
04JR-MA-009-007	35.951	0.001	0.000	0.000	28.896	0.003	0.447	35.043	0.043	0.100	100.485
04JR-MA-009-008	35.967	0.000	0.000	0.000	30.118	0.002	0.450	33.626	0.043	0.098	100.305
04JR-MA-009-009	36.130	0.000	0.000	0.000	29.390	0.002	0.450	34.392	0.037	0.093	100.492
04JR-MA-009-010	35.956	0.001	0.000	0.001	29.934	0.003	0.449	33.989	0.040	0.103	100.475
04JR-MA-009-011	36.241	0.001	0.000	0.001	29.666	0.010	0.470	34.430	0.040	0.092	100.952
04JR-MA-009-012	36.225	0.012	0.001	0.000	30.037	0.009	0.432	33.551	0.037	0.106	100.408
04JR-MA-009-013	36.067	0.004	0.000	0.000	30.775	0.003	0.441	32.896	0.033	0.091	100.311
04JR-MA-009-014	36.419	0.001	0.000	0.000	29.849	0.005	0.431	33.141	0.034	0.098	99.978
04JR-MA-009-015	35.833	0.001	0.000	0.000	29.057	0.002	0.446	34.617	0.043	0.125	100.124
04JR-MA-009-017	36.546	0.000	0.000	0.000	30.321	0.007	0.437	33.259	0.043	0.096	100.710
04JR-MA-009-018	36.176	0.000	0.000	0.005	29.728	0.005	0.441	33.868	0.035	0.089	100.347
04JR-MA-009-019	35.775	0.002	0.000	0.000	28.961	0.012	0.467	34.806	0.038	0.098	100.159
04JR-MA-009-020	36.435	0.011	0.002	0.002	30.245	0.005	0.442	33.094	0.028	0.090	100.353
04JR-MA-009-021	36.249	0.000	0.000	0.000	30.206	0.006	0.447	32.919	0.033	0.086	99.945
04JR-MA-009-022	36.271	0.023	0.000	0.000	30.792	0.008	0.439	32.589	0.041	0.094	100.256
04JR-MA-009-023	36.505	0.004	0.000	0.000	30.607	0.003	0.442	32.725	0.035	0.092	100.414
04JR-MA-009-024	36.331	0.010	0.001	0.000	29.582	0.005	0.432	34.216	0.036	0.106	100.718
04JR-MA-009-025	35.975	0.001	0.000	0.000	29.706	0.002	0.454	33.620	0.034	0.096	99.888
04JR-MA-009-026	35.133	0.000	0.000	0.000	27.217	0.010	0.498	37.174	0.038	0.085	100.155
04JR-MA-009-027	35.956	0.002	0.000	0.000	27.824	0.005	0.458	35.959	0.040	0.104	100.348
04JR-MA-009-028	36.145	0.005	0.000	0.004	29.794	0.009	0.429	33.715	0.031	0.100	100.233
04JR-MA-009-029	36.373	0.000	0.000	0.002	30.380	0.007	0.421	33.302	0.036	0.098	100.618
04JR-MA-009-030	35.804	0.034	0.000	0.000	30.364	0.009	0.437	33.092	0.029	0.087	99.858
04JR-MA-009-031	35.983	0.006	0.000	0.000	30.871	0.007	0.433	32.501	0.039	0.092	99.932

Appendix 6

Gold Grain Data

Shaded samples are ones identified as having heavy mineral/metal contamination.

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight	Calculated ppb visible gold in HMC			
	Total	Reshaped	Modified	Pristine	(g)	Total	Reshaped	Modified	Pristine
04JR-MA-001	1	1	0	0	97.8	2	2	0	0
04JR-MA-002	204	105	67	32	105.6	355	239	87	29
04JR-MA-003	3	1	2	0	59.5	1	<1	1	0
04JR-MA-004	109	53	33	23	79.3	311	234	43	33
04JR-MA-005	0	0	0	0	24.3	0	0	0	0
04JR-MA-006	0	0	0	0	108.6	0	0	0	0
04JR-MA-007	0	0	0	0	137.1	0	0	0	0
04JR-MA-008	0	0	0	0	63	0	0	0	0
04JR-MA-009	1	0	1	0	68.5	<1	0	<1	0
04JR-MA-010	1	0	1	0	336	<1	0	<1	0
04JR-MA-011	0	0	0	0	37.6	0	0	0	0
04JR-MA-012	0	0	0	0	212.7	0	0	0	0
04JR-MA-013	0	0	0	0	323.1	0	0	0	0
04JR-MA-014	0	0	0	0	237.2	0	0	0	0
04JR-MA-015	0	0	0	0	125.3	0	0	0	0
04JR-MA-016	0	0	0	0	104.3	0	0	0	0
04JR-MA-017	0	0	0	0	163.4	0	0	0	0
04JR-MA-018	0	0	0	0	256.9	0	0	0	0
04JR-MA-019	0	0	0	0	69.4	0	0	0	0
04JR-MA-020	0	0	0	0	262.1	0	0	0	0
04JR-MA-021	0	0	0	0	78.1	0	0	0	0
04JR-MA-022	0	0	0	0	126.1	0	0	0	0
04JR-MA-023	1	1	0	0	202.4	2	2	0	0
04JR-MA-024	0	0	0	0	86.9	0	0	0	0
04JR-MA-025	0	0	0	0	65.8	0	0	0	0
04JR-MA-026	1	1	0	0	374.4	1	1	0	0
04JR-MA-027	0	0	0	0	51.8	0	0	0	0
04JR-MA-028	0	0	0	0	214.6	0	0	0	0
04JR-MA-029	0	0	0	0	167.8	0	0	0	0
04JR-MA-030	2	2	0	0	76.6	3	3	0	0
04JR-MA-031	1	1	0	0	114.9	1	1	0	0
04JR-MA-032	1	1	0	0	181.7	2	2	0	0
04JR-MA-033	0	0	0	0	87.5	0	0	0	0
04JR-MA-034	0	0	0	0	177.8	0	0	0	0
04JR-MA-035	0	0	0	0	56.7	0	0	0	0
04JR-MA-036	0	0	0	0	203.7	0	0	0	0
04JR-MA-037	1	1	0	0	35.8	1	1	0	0
04JR-MA-038	0	0	0	0	203.3	0	0	0	0
04JR-MA-039	0	0	0	0	114.9	0	0	0	0
04JR-MA-040	0	0	0	0	259	0	0	0	0
04JR-MA-041	0	0	0	0	322.8	0	0	0	0
04JR-MA-042	0	0	0	0	19.6	0	0	0	0

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight (g)	Calculated ppb visible gold in HMC			
	Total	Reshaped	Modified	Pristine		Total	Reshaped	Modified	Pristine
04JR-MA-043	0	0	0	0	496.9	0	0	0	0
04JR-MA-044	0	0	0	0	125.2	0	0	0	0
04JR-MA-045	0	0	0	0	174.9	0	0	0	0
04JR-MA-046	1	1	0	0	220.9	2	2	0	0
04JR-MA-047	0	0	0	0	282.6	0	0	0	0
04JR-MA-048	0	0	0	0	245.8	0	0	0	0
04JR-MA-049	0	0	0	0	197.5	0	0	0	0
04JR-MA-050	0	0	0	0	19.5	0	0	0	0
04JR-MA-051	0	0	0	0	807	0	0	0	0
04JR-MA-052	0	0	0	0	203.7	0	0	0	0
04JR-MA-053	0	0	0	0	399.2	0	0	0	0
04JR-MA-054	9	0	3	6	29.9	67	0	27	41
04JR-MA-055	0	0	0	0	24.5	0	0	0	0
04JR-MA-056	1	0	1	0	158.7	<1	0	<1	0
04JR-MA-057	2	2	0	0	16.9	6	6	0	0
04JR-MA-058	1	1	0	0	108.6	<1	<1	0	0
04JR-MA-059	0	0	0	0	38.4	0	0	0	0
04JR-MA-060	0	0	0	0	31.1	0	0	0	0
04JR-MA-061	1	1	0	0	188.8	2	2	0	0
04JR-MA-062	0	0	0	0	106.5	0	0	0	0
04JR-MA-063	1	1	0	0	185.2	3	3	0	0
04JR-MA-064	0	0	0	0	117.3	0	0	0	0
04JR-MA-065	0	0	0	0	35.1	0	0	0	0
04JR-MA-066	0	0	0	0	152.7	0	0	0	0
04JR-MA-067	0	0	0	0	173	0	0	0	0
04JR-MA-068	0	0	0	0	335.1	0	0	0	0
04JR-MA-069	0	0	0	0	217.1	0	0	0	0
04JR-MA-070	0	0	0	0	250	0	0	0	0
04JR-MA-071	0	0	0	0	168	0	0	0	0
04JR-MA-072	0	0	0	0	22.3	0	0	0	0
04JR-MA-073	0	0	0	0	120.5	0	0	0	0
04JR-MA-074	0	0	0	0	40	0	0	0	0
04JR-MA-075	0	0	0	0	419.1	0	0	0	0
04JR-MA-076	0	0	0	0	43.3	0	0	0	0
04JR-MA-077	1	1	0	0	312.2	2	2	0	0
04JR-MA-078	1	1	0	0	8	3	3	0	0
04JR-MA-079	0	0	0	0	276.6	0	0	0	0
04JR-MA-080	0	0	0	0	206.9	0	0	0	0
04JR-MA-081	0	0	0	0	168.1	0	0	0	0
04JR-MA-082	0	0	0	0	16.1	0	0	0	0
04JR-MA-083	0	0	0	0	93.6	0	0	0	0
04JR-MA-084	0	0	0	0	120.5	0	0	0	0

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight	Calculated ppb visible gold in HMC			
	Total	Reshaped	Modified	Pristine	(g)	Total	Reshaped	Modified	Pristine
04JR-MA-085	0	0	0	0	182.5	0	0	0	0
04JR-MA-086	0	0	0	0	38.3	0	0	0	0
04JR-MA-087	0	0	0	0	1.4	0	0	0	0
04JR-MA-088	0	0	0	0	251.8	0	0	0	0
04JR-MA-089	3	2	1	0	81.2	2	1	1	0
04JR-MA-090	0	0	0	0	77.4	0	0	0	0
04JR-MA-091	0	0	0	0	23.1	0	0	0	0
04JR-MA-092	0	0	0	0	110.4	0	0	0	0
04JR-MA-093	3	3	0	0	441.6	3	3	0	0
04JR-MA-094	0	0	0	0	32.6	0	0	0	0
04JR-MA-095	0	0	0	0	373.2	0	0	0	0
04JR-MA-096	0	0	0	0	56.5	0	0	0	0
04JR-MA-097	0	0	0	0	167.2	0	0	0	0
04JR-MA-098	0	0	0	0	47.8	0	0	0	0
04JR-MA-099	0	0	0	0	157.1	0	0	0	0
04JR-MA-100	0	0	0	0	168.7	0	0	0	0
04JR-MA-101	0	0	0	0	233.2	0	0	0	0
04JR-MA-102	0	0	0	0	42.3	0	0	0	0
04JR-MA-103	0	0	0	0	222.2	0	0	0	0
04JR-MA-104	1	1	0	0	300.3	2	2	0	0
04JR-MA-105	0	0	0	0	249.7	0	0	0	0
04JR-MA-106	1	1	0	0	226.2	<1	<1	0	0
04JR-MA-107	0	0	0	0	280.6	0	0	0	0
04JR-MA-108	0	0	0	0	204.9	0	0	0	0
04JR-MA-109	0	0	0	0	209.8	0	0	0	0
04JR-MA-110	0	0	0	0	201.5	0	0	0	0
04JR-MA-111	0	0	0	0	339.6	0	0	0	0
04JR-MA-112	0	0	0	0	111.5	0	0	0	0
04JR-MA-113	0	0	0	0	109.2	0	0	0	0
04JR-MA-114	0	0	0	0	230	0	0	0	0
04JR-MA-115	0	0	0	0	270.1	0	0	0	0
04JR-MA-116	0	0	0	0	408.9	0	0	0	0
04JR-MA-117	0	0	0	0	106.8	0	0	0	0
04JR-MA-118	0	0	0	0	89.5	0	0	0	0
04JR-MA-119	0	0	0	0	158	0	0	0	0
04JR-MA-120	0	0	0	0	247	0	0	0	0
04JR-MA-121	0	0	0	0	251.4	0	0	0	0
04JR-MA-122	1	1	0	0	318.4	1	1	0	0
04JR-MA-123	2	2	0	0	284.8	<1	<1	0	0
04JR-MA-124	0	0	0	0	290.6	0	0	0	0
04JR-MA-125	0	0	0	0	101.1	0	0	0	0
04JR-MA-126	1	1	0	0	197.1	<1	<1	0	0

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight (g)	Calculated ppb visible gold in HMC			
	Total	Reshaped	Modified	Pristine		Total	Reshaped	Modified	Pristine
04JR-MA-127	0	0	0	0	88.8	0	0	0	0
04JR-MA-128	0	0	0	0	148.2	0	0	0	0
04JR-MA-129	0	0	0	0	168.9	0	0	0	0
04JR-MA-130	2	2	0	0	452.2	3	3	0	0
04JR-MA-131	0	0	0	0	181	0	0	0	0
04JR-MA-132	0	0	0	0	458.7	0	0	0	0
04JR-MA-133	0	0	0	0	345.4	0	0	0	0
04JR-MA-134	0	0	0	0	58.4	0	0	0	0
04JR-MA-135	0	0	0	0	98.7	0	0	0	0
04JR-MA-136	0	0	0	0	135.4	0	0	0	0
04JR-MA-137	0	0	0	0	89	0	0	0	0
04JR-MA-138	1	1	0	0	148.1	168	168	0	0
04JR-MA-139	0	0	0	0	49.4	0	0	0	0
04JR-MA-140	1	1	0	0	239.6	<1	<1	0	0
04JR-MA-141	0	0	0	0	394	0	0	0	0
04JR-MA-142	1	0	0	1	259	<1	0	0	<1
04JR-MA-143	0	0	0	0	404.8	0	0	0	0
04JR-MA-144	3	3	0	0	126	3	3	0	0
04JR-MA-145	0	0	0	0	376	0	0	0	0
04JR-MA-146	0	0	0	0	108.9	0	0	0	0
04JR-MA-147	0	0	0	0	208.4	0	0	0	0
04JR-MA-148	1	0	0	1	108.5	2	0	0	2
04JR-MA-149	0	0	0	0	184.9	0	0	0	0
04JR-MA-150	2	1	1	0	300	1	1	<1	0
04JR-MA-151	0	0	0	0	95.6	0	0	0	0
04JR-MA-152	4	2	1	1	169.7	2	2	<1	<1
04JR-MA-153	1	1	0	0	64.9	3	3	0	0
04JR-MA-154	0	0	0	0	21.8	0	0	0	0
04JR-MA-155	0	0	0	0	50.1	0	0	0	0
04JR-MA-156	1	1	0	0	236.1	<1	<1	0	0
04JR-MA-157	0	0	0	0	137.2	0	0	0	0
04JR-MA-158	1	1	0	0	481.3	1	1	0	0
04JR-MA-159	0	0	0	0	435.6	0	0	0	0
04JR-MA-160	0	0	0	0	118.7	0	0	0	0
04JR-MA-161	0	0	0	0	401.2	0	0	0	0
04JR-TM-001	0	0	0	0	139.9	0	0	0	0
04JR-TM-002	1	1	0	0	118.9	3	3	0	0
04JR-TM-003	0	0	0	0	41.1	0	0	0	0
04JR-TM-004	0	0	0	0	30	0	0	0	0
04JR-TM-005	0	0	0	0	75.6	0	0	0	0
04JR-TM-006	0	0	0	0	46.2	0	0	0	0
04JR-TM-007	0	0	0	0	29.4	0	0	0	0

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight	Calculated ppb visible gold in HMC			
	Total	Reshaped	Modified	Pristine	(g)	Total	Reshaped	Modified	Pristine
04JR-TM-008	0	0	0	0	50.7	0	0	0	0
04JR-TM-009	0	0	0	0	16	0	0	0	0
04JR-TM-010	0	0	0	0	38.8	0	0	0	0
04JR-TM-011	0	0	0	0	6.8	0	0	0	0
04JR-TM-012	0	0	0	0	9.4	0	0	0	0
04JR-TM-013	0	0	0	0	13.4	0	0	0	0
04JR-TM-014	0	0	0	0	107.6	0	0	0	0
04JR-TM-015	0	0	0	0	489.9	0	0	0	0
04JR-TM-016	0	0	0	0	87.1	0	0	0	0
04JR-TM-017	0	0	0	0	18.4	0	0	0	0
04JR-TM-018	0	0	0	0	369.9	0	0	0	0
04JR-TM-019	0	0	0	0	364.3	0	0	0	0
04JR-TM-020	1	1	0	0	31.9	20	20	0	0
04JR-TM-021	0	0	0	0	76	0	0	0	0
04JR-TM-022	1	1	0	0	348.1	1129	1129	0	0
04JR-TM-023	0	0	0	0	273.8	0	0	0	0
04JR-TM-024	3	3	0	0	473.6	38	38	0	0
04JR-TM-025	2	0	0	2	123.2	5	0	0	5
04JR-TM-026	1	1	0	0	197.3	<1	<1	0	0
04JR-TM-027	0	0	0	0	260.2	0	0	0	0
04JR-TM-028	6	0	0	6	72.9	11	0	0	11
04JR-TM-029	1	0	0	1	52.3	4	0	0	4
04JR-TM-030	0	0	0	0	8	0	0	0	0
04JR-TM-031	0	0	0	0	127.9	0	0	0	0
04JR-TM-032	0	0	0	0	131	0	0	0	0
04JR-TM-033	0	0	0	0	41.2	0	0	0	0
04JR-TM-034	1	0	1	0	231.9	<1	0	<1	0
04JR-TM-035	3	1	2	0	164.3	<1	<1	<1	0
04JR-TM-036	0	0	0	0	90.5	0	0	0	0
04JR-TM-037	0	0	0	0	41.9	0	0	0	0
04JR-TM-038	0	0	0	0	69.7	0	0	0	0
04JR-TM-039	3	1	2	0	230	<1	<1	<1	0
04JR-TM-040	4	0	3	1	201.5	6	0	1	5
04JR-TM-041	3	0	1	2	310.5	<1	0	<1	<1
04JR-TM-042	2	1	0	1	406.1	<1	<1	0	<1
04JR-TM-043	0	0	0	0	291.5	0	0	0	0
04JR-TM-044	3	3	0	0	338.1	10	10	0	0
04JR-TM-045	0	0	0	0	152.4	0	0	0	0
04JR-TM-046	1	1	0	0	191.2	3	3	0	0
04JR-TM-047	0	0	0	0	12.6	0	0	0	0
04JR-TM-048	0	0	0	0	4.3	0	0	0	0
04JR-TM-049	0	0	0	0	10.3	0	0	0	0

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight	Calculated ppb visible gold in HMC			
	Total	Reshaped	Modified	Pristine	(g)	Total	Reshaped	Modified	Pristine
04JR-TM-050	0	0	0	0	2.6	0	0	0	0
04JR-TM-051	0	0	0	0	296.6	0	0	0	0
04JR-TM-052	0	0	0	0	163.5	0	0	0	0
04JR-TM-053	0	0	0	0	3.7	0	0	0	0
04JR-TM-054	1	1	0	0	278.2	<1	<1	0	0
04JR-TM-055	2	1	1	0	220.3	1	<1	1	0
04JR-TM-056	3	3	0	0	510.8	1	1	0	0
04JR-TM-057	3	2	1	0	245.7	6	3	3	0
04JR-TM-058	1	0	1	0	116.9	1	0	1	0
04JR-TM-059	2	0	0	2	74.8	1	0	0	1
04JR-TM-060	0	0	0	0	155.6	0	0	0	0
04JR-TM-061	0	0	0	0	114.4	0	0	0	0
04JR-TM-062	4	2	2	0	54	24	14	10	0
04JR-TM-063	2	1	1	0	72.3	8	5	3	0
04JR-TM-064	0	0	0	0	218.7	0	0	0	0
04JR-TM-065	0	0	0	0	413.2	0	0	0	0
04JR-TM-066	0	0	0	0	268.6	0	0	0	0
04JR-TM-067	0	0	0	0	274	0	0	0	0
04JR-TM-068	0	0	0	0	385.2	0	0	0	0
04JR-TM-069	0	0	0	0	607.2	0	0	0	0
04JR-TM-070	0	0	0	0	217.1	0	0	0	0
04JR-TM-071	0	0	0	0	219.1	0	0	0	0
04JR-TM-072	0	0	0	0	12.6	0	0	0	0
04JR-TM-073	0	0	0	0	281.3	0	0	0	0
04JR-TM-074	0	0	0	0	196.1	0	0	0	0
04JR-SG-001	0	0	0	0	136.5	0	0	0	0
04JR-SG-002	0	0	0	0	459.7	0	0	0	0
04JR-SG-003	0	0	0	0	144.4	0	0	0	0
04JR-SG-004	0	0	0	0	261.3	0	0	0	0
04JR-SG-005	0	0	0	0	304.1	0	0	0	0
04JR-SG-006	0	0	0	0	118.6	0	0	0	0
04JR-SG-007	0	0	0	0	199.1	0	0	0	0
04JR-SG-008	1	0	1	0	226.8	<1	0	<1	0
04JR-SG-009	0	0	0	0	413.2	0	0	0	0
04JR-SG-010	0	0	0	0	205.9	0	0	0	0
04JR-SG-011	0	0	0	0	301.8	0	0	0	0
04JR-SG-012	0	0	0	0	221.5	0	0	0	0
04JR-SG-013	0	0	0	0	243.8	0	0	0	0
04JR-SG-014	0	0	0	0	102.4	0	0	0	0
04JR-SG-015	1	0	1	0	248	2	0	2	0

Appendix 7

Table Concentrate Data

Shaded samples are ones identified as having heavy mineral/metal contamination.

	<2.0 mm Table Concentrate										
		Heavy Liquid Separation S.G 3.20									
				Nonferromagnetic Fraction							
					Processed Split						
Sample Number	Total	Heavy Liquid Lights	Total Mag	Total	%	Weight	<0.25 mm (wash)	-0.25 mm	0.25 to 0.5 mm	0.5 to 1.0 mm	*1.0 to 2.0 mm
04JR-MA-001	534.1	423.3	13	97.8	100	97.8	4.5	29.8	43.7	19.3	0.50
04JR-MA-002	486.1	373.4	7.1	105.6	100	105.6	3.5	82.4	13.4	4.8	1.50
04JR-MA-003	526.5	460.2	6.8	59.5	100	59.5	2.3	31.1	18.2	6.9	1.00
04JR-MA-004	344.4	261.3	3.8	79.3	100	79.3	0.68	77.6	1	0.02	0.00
04JR-MA-005	339.5	309.7	5.5	24.3	100	24.3	1.3	11.4	8.4	2.9	0.30
04JR-MA-006	642.3	524.2	9.5	108.6	100	108.6	3	36.1	55.4	13.6	0.50
04JR-MA-007	579	436.8	5.1	137.1	100	137.1	4.6	41.4	65	25.5	0.60
04JR-MA-008	467.4	402.9	1.5	63	100	63	0.7	44.7	11.9	5.1	0.60
04JR-MA-009	426.1	354.6	3	68.5	100	68.5	3.15	51.7	12.7	0.9	0.05
04JR-MA-010	705.98	363	6.98	336	100	336	0.49	334.3	0.9	0.3	0.01
04JR-MA-011	264.9	227	0.3	37.6	100	37.6	0.48	34.6	2.2	0.3	0.02
04JR-MA-012	645.4	427.7	5	212.7	100	212.7	3.3	176.1	26.2	6.3	0.80
04JR-MA-013	1053.1	692.6	37.4	323.1	100	323.1	3.6	248.9	55.9	13.1	1.60
04JR-MA-014	459.4	203	19.2	237.2	100	237.2	1.11	229	6.4	0.6	0.09
04JR-MA-015	580.9	453.7	1.9	125.3	100	125.3	1.91	96.7	24.3	2.3	0.09
04JR-MA-016	470.6	361	5.3	104.3	100	104.3	1.7	65.1	29.8	6.4	1.30
04JR-MA-017	547.9	381.8	2.7	163.4	100	163.4	2.6	138.7	20.4	1.3	0.40
04JR-MA-018	580.3	314.8	8.6	256.9	100	256.9	2.1	243.3	11.4	0.1	0.00
04JR-MA-019	489.1	417.8	1.9	69.4	100	69.4	2.44	48.1	17.9	0.9	0.06
04JR-MA-020	801.1	528.7	10.3	262.1	100	262.1	8.2	197.5	50.9	5	0.50
04JR-MA-021	391.7	305.2	8.4	78.1	100	78.1	1.1	64.8	9.4	2.3	0.50
04JR-MA-022	685.7	547.3	12.3	126.1	100	126.1	1.56	110.5	13.2	0.8	0.04
04JR-MA-023	553.3	349	1.9	202.4	100	202.4	2.3	184.7	14.1	1.1	0.20
04JR-MA-024	471.1	382.6	1.6	86.9	100	86.9	3.6	50.1	29	3.9	0.30
04JR-MA-025	222	155.6	0.6	65.8	100	65.8	0.46	63.8	1.5	0.03	0.01
04JR-MA-026	853.7	470.1	9.2	374.4	100	374.4	4.2	317.8	46.5	5.4	0.50
04JR-MA-027	289.8	237.6	0.4	51.8	100	51.8	1.15	49.2	1.4	0.05	0.00
04JR-MA-028	494.1	274	5.5	214.6	100	214.6	7.4	139.3	64.6	3.2	0.10
04JR-MA-029	881.3	712.8	0.7	167.8	100	167.8	7.7	134.9	22.6	2.3	0.30
04JR-MA-030	324.1	247.4	0.1	76.6	100	76.6	1.5	66.2	7.3	1.4	0.20
04JR-MA-031	288.3	169.7	3.7	114.9	100	114.9	0.46	111.4	2.6	0.4	0.04
04JR-MA-032	673.2	488.7	2.8	181.7	100	181.7	7	130.2	38.6	5.3	0.60
04JR-MA-033	449.3	361.3	0.5	87.5	100	87.5	0.79	84.3	2.3	0.1	0.01
04JR-MA-034	500.7	321	1.9	177.8	100	177.8	5.9	119.1	44.7	7.4	0.70
JR-MA-035	365.3	308.5	0.1	56.7	100	56.7	0.14	56.4	0.1	0.06	0.00
JR-MA-035/03	191.4	NA	1	190.4	100	190.4	0.3	186.8	2.3	0.8	0.20
JR-MA-036	443.5	239.7	0.1	203.7	100	203.7	2	187.4	12.1	2.1	0.10
04JR-MA-037	303.5	263.7	4	35.8	100	35.8	2.2	21.1	7.1	4.4	1.00
04JR-MA-038	1342	1128.9	9.8	203.3	100	203.3	4	79.3	90.2	28.6	1.20
04JR-MA-039	726.9	609.4	2.6	114.9	100	114.9	6.4	38.6	64.9	4.8	0.20
04JR-MA-040	715	427.5	28.5	259	100	259	8.3	205.1	42.3	3	0.30
04JR-MA-041	852.2	523.7	5.7	322.8	25	80.7	3.2	29.4	45.8	2	0.30
04JR-MA-042	279.2	259.3	0.3	19.6	100	19.6	1.43	14.1	3.6	0.4	0.07
04JR-MA-043	1060.7	563.4	0.4	496.9	100	496.9	3.79	474.1	18.7	0.3	0.01
04JR-MA-044	327.8	197.7	4.9	125.2	100	125.2	2.3	109.7	10.9	2.1	0.20

Sample Number	<2.0 mm Table Concentrate										
		Heavy Liquid Separation S.G 3.20									
				Nonferromagnetic Fraction							
					Processed Split						
	Total	Heavy Liquid Lights	Total Mag	Total	%	Weight	<0.25 mm (wash)	-0.25 mm	0.25 to 0.5 mm	0.5 to 1.0 mm	*1.0 to 2.0 mm
04JR-MA-045	**541.9**	**363.4**	**3.6**	**174.9**	**100**	**174.9**	**8.2**	**89.7**	**60.5**	**12.8**	**3.70**
04JR-MA-046	442.6	197.8	23.9	220.9	100	220.9	2.3	166.6	45.5	5.6	0.90
04JR-MA-047	479.3	195.1	1.6	282.6	100	282.6	5	253.5	22	1.9	0.20
04JR-MA-048	436.2	172.3	18.1	245.8	100	245.8	4.6	183	55.2	2.4	0.60
04JR-MA-049	298.7	98.2	3	197.5	100	197.5	1.16	193.5	2.8	0.03	0.01
04JR-MA-050	**244.3**	**223.7**	**1.1**	**19.5**	**100**	**19.5**	**1**	**12.9**	**3.6**	**1.5**	**0.50**
04JR-MA-051	2054.9	1205.4	42.5	807	10	80.7	2.1	10.8	56.6	11.1	0.10
04JR-MA-052	594.2	368.7	21.8	203.7	100	203.7	3.8	164.3	31.6	3.6	0.40
04JR-MA-053	871.9	467.5	5.2	399.2	100	399.2	4.2	356.2	36.2	2.5	0.10
04JR-MA-054	281.4	251.2	0.3	29.9	100	29.9	0.9	25	2.7	0.8	0.50
04JR-MA-055	**352.6**	**321**	**7.1**	**24.5**	**100**	**24.5**	**1.45**	**12.7**	**9.3**	**1**	**0.05**
04JR-MA-056	645.6	472.1	14.8	158.7	100	158.7	3.6	98.7	47.8	7.9	0.70
04JR-MA-057	**247.2**	**230**	**0.3**	**16.9**	**100**	**16.9**	**0.28**	**16.5**	**0.1**	**0.01**	**0.01**
04JR-MA-058	**566.9**	**457.4**	**0.9**	**108.6**	**100**	**108.6**	**5.49**	**65.6**	**36.8**	**0.7**	**0.01**
04JR-MA-059	508.9	468.8	1.7	38.4	100	38.4	0.18	38	0.2	0.01	0.01
04JR-MA-060	**337.6**	**305.1**	**1.4**	**31.1**	**100**	**31.1**	**1**	**9.4**	**8.8**	**9.4**	**2.50**
04JR-MA-061	274.2	82.5	2.9	188.8	100	188.8	0.99	186.6	1.2	0.01	0.00
04JR-MA-062	**360.2**	**248.2**	**5.5**	**106.5**	**100**	**106.5**	**2.7**	**86.8**	**14.5**	**2.3**	**0.20**
04JR-MA-063	299	113.2	0.6	185.2	100	185.2	0.5	179.8	4.8	0.1	0.00
04JR-MA-064	492.5	370	5.2	117.3	100	117.3	2.7	88.2	24.5	1.8	0.10
04JR-MA-065	1145.7	1110.1	0.5	35.1	100	35.1	2.29	11.8	12.9	8.1	0.01
04JR-MA-066	309.6	156	0.9	152.7	100	152.7	1.29	146	5.1	0.3	0.01
04JR-MA-067	330.4	156.9	0.5	173	100	173	0.79	168.8	3.4	0.01	0.00
04JR-MA-068	734.6	385.5	14	335.1	100	335.1	5	297.3	26.6	5.1	1.10
04JR-MA-069	722.1	498.5	6.5	217.1	100	217.1	8.6	128.2	74.4	5.2	0.70
04JR-MA-070	494	229.3	14.7	250	100	250	2.9	219.4	25.4	2.2	0.10
04JR-MA-071	1027.6	859.2	0.4	168	100	168	5.2	44.9	108.2	9.6	0.10
04JR-MA-072	727	704	0.7	22.3	100	22.3	0.89	11.7	8.4	1.3	0.01
04JR-MA-073	411.1	287.2	3.4	120.5	100	120.5	3	65	45.3	6.5	0.70
04JR-MA-074	**151.8**	**108.4**	**3.4**	**40**	**100**	**40**	**1.2**	**28.6**	**9.5**	**0.6**	**0.10**
04JR-MA-075	712.6	293.4	0.1	419.1	100	419.1	5.9	373.1	39.6	0.5	0.00
04JR-MA-076	241.1	196	1.8	43.3	100	43.3	1.9	38.8	2.5	0.1	0.00
04JR-MA-077	648.3	336	0.1	312.2	100	312.2	5.4	246.8	53.4	5.6	1.00
04JR-MA-078	**163.7**	**155.3**	**0.4**	**8**	**100**	**8**	**0.37**	**7.2**	**0.4**	**0.03**	**0.00**
04JR-MA-079	461	182.6	1.8	276.6	100	276.6	3.87	249.9	22.1	0.7	0.03
04JR-MA-080	638	427	4.1	206.9	100	206.9	3.66	174.3	28.2	0.7	0.04
04JR-MA-081	416	247.7	0.2	168.1	100	168.1	2.99	146.1	18.9	0.1	0.01
04JR-MA-082	235.1	217.8	1.2	16.1	100	16.1	0.08	15	0.9	0.1	0.02
04JR-MA-083	531.1	436.7	0.8	93.6	100	93.6	3.1	77.4	11.6	1.4	0.10
04JR-MA-084	518.3	395.5	2.3	120.5	100	120.5	23.59	93.4	2.8	0.7	0.01
04JR-MA-085	530.8	346.9	1.4	182.5	100	182.5	5.7	136.1	38.3	2.1	0.30
04JR-MA-086	**313.8**	**272.2**	**3.3**	**38.3**	**100**	**38.3**	**1.3**	**21.8**	**12**	**2.8**	**0.40**
04JR-MA-087	125	123.5	0.1	1.4	100	1.4	0.17	0.4	0.6	0.2	0.03
04JR-MA-088	601.4	337.8	11.8	251.8	100	251.8	16.7	165.8	65.7	3.3	0.30

Sample Number	<2.0 mm Table Concentrate										
		Heavy Liquid Separation S.G 3.20									
				Nonferromagnetic Fraction							
					Processed Split						
	Total	Heavy Liquid Lights	Total Mag	Total	%	Weight	<0.25 mm (wash)	-0.25 mm	0.25 to 0.5 mm	0.5 to 1.0 mm	*1.0 to 2.0 mm
04JR-MA-089	361	279.5	0.3	81.2	100	81.2	1.58	74.3	5	0.3	0.02
04JR-MA-090	436.2	351	7.8	77.4	100	77.4	3.2	43.8	26.2	3.6	0.60
04JR-MA-091	181.2	156.8	1.3	23.1	100	23.1	0.39	19.8	2.8	0.1	0.01
04JR-MA-092	478.7	367.6	0.7	110.4	100	110.4	2.6	85	19	3.4	0.40
04JR-MA-093	738.9	282	15.3	441.6	100	441.6	0.59	438.4	2.5	0.1	0.01
04JR-MA-094	246.48	209.9	3.98	32.6	100	32.6	1.3	21.1	8.8	1.2	0.20
04JR-MA-095	748.6	366.2	9.2	373.2	50	186.6	11.2	94.8	49.2	25.8	5.60
04JR-MA-096	411.5	352.9	2.1	56.5	100	56.5	1.5	33.6	19.1	1.9	0.40
04JR-MA-097	368.2	200	1	167.2	100	167.2	2.58	152.8	11.5	0.3	0.02
04JR-MA-098	248.3	198.5	2	47.8	100	47.8	1.6	39.8	5.4	0.9	0.10
04JR-MA-099	580.5	421.3	2.1	157.1	100	157.1	3.5	121.5	21.9	7.9	2.30
04JR-MA-100	528.2	346.7	12.8	168.7	100	168.7	5.2	141.9	20.2	1.1	0.30
04JR-MA-101	1491.3	1248.8	9.3	233.2	50	116.6	10.5	28.7	42.7	24.1	10.60
04JR-MA-102	691.4	647.6	1.5	42.3	100	42.3	2.5	23.8	12.8	2.8	0.40
04JR-MA-103	754.2	503.5	28.5	222.2	100	222.2	3.5	183.1	27	6.1	2.50
04JR-MA-104	924.7	547.6	76.8	300.3	100	300.3	4.7	218.6	66.1	9.5	1.40
04JR-MA-105	984.4	706.8	27.9	249.7	100	249.7	4.8	222.1	18.1	3.2	1.50
04JR-MA-106	581	351.2	3.6	226.2	100	226.2	1.3	219.4	5.1	0.3	0.10
04JR-MA-107	686.6	397.6	8.4	280.6	100	280.6	7.2	171.8	81.4	16.7	3.50
04JR-MA-108	1190.5	964.1	21.5	204.9	100	204.9	6.5	101.8	77.9	16.6	2.10
04JR-MA-109	611.4	400	1.6	209.8	100	209.8	5.3	164.6	35.6	3.6	0.70
04JR-MA-110	908.6	706	1.1	201.5	100	201.5	6.9	129.2	61.4	3.5	0.50
04JR-MA-111	594.9	232.5	22.8	339.6	100	339.6	5.5	290.6	39.2	3.8	0.50
04JR-MA-112	875.4	761.9	2	111.5	100	111.5	6.2	55.7	45.9	3.6	0.10
04JR-MA-113	512.3	401.9	1.2	109.2	100	109.2	2.3	69.5	19.3	9.7	8.40
04JR-MA-114	1050.8	805.2	15.6	230	100	230	4.3	149.8	67.1	7.4	1.40
04JR-MA-115	579.5	307.7	1.7	270.1	100	270.1	2.2	246.6	19.3	1.6	0.40
04JR-MA-116	774	357.2	7.9	408.9	100	408.9	6.5	319.7	79.7	2.6	0.40
04JR-MA-117	214.6	105.8	2	106.8	100	106.8	3.69	93	9.9	0.2	0.01
04JR-MA-118	445.7	347.4	8.8	89.5	100	89.5	3.1	48.7	31.5	5.4	0.80
04JR-MA-119	598.4	440.3	0.1	158	100	158	0.88	152.6	4.2	0.3	0.02
04JR-MA-120	763.7	484.6	32.1	247	100	247	6.6	157	61.3	15.6	6.50
04JR-MA-121	554.6	297.6	5.6	251.4	100	251.4	7.5	213.3	30.2	0.2	0.20
04JR-MA-122	929.9	583.3	28.2	318.4	50	159.2	4.3	97.6	35.9	16.7	4.70
04JR-MA-123	768.8	478.5	5.5	284.8	100	284.8	7.2	178.4	72.7	19.5	7.00
04JR-MA-124	690.7	365.4	34.7	290.6	100	290.6	4.4	187.4	83.7	13.7	1.40
04JR-MA-125	380.3	278	1.2	101.1	100	101.1	2.26	88.9	9.2	0.7	0.04
04JR-MA-126	591.6	392.3	2.2	197.1	100	197.1	7.4	148.2	39.2	2.1	0.20
04JR-MA-127	426.8	337.6	0.4	88.8	100	88.8	4.1	62.1	20.5	2	0.10
04JR-MA-128	425.5	276.4	0.9	148.2	100	148.2	0.6	146.3	1.1	0.2	0.00
04JR-MA-129	499	328.1	2	168.9	100	168.9	4.9	133.4	26.4	4	0.20
04JR-MA-130	1122.6	668.2	2.2	452.2	100	452.2	19.5	350.3	68	13.4	1.00
04JR-MA-131	513.8	331	1.8	181	100	181	7.18	144.6	27.6	1.6	0.02
04JR-MA-132	784.8	322.2	3.9	458.7	100	458.7	11.6	367.1	65.2	13	1.80

	<2.0 mm Table Concentrate										
		Heavy Liquid Separation S.G 3.20									
				Nonferromagnetic Fraction							
					Processed Split						
Sample Number	Total	Heavy Liquid Lights	Total Mag	Total	%	Weight	<0.25 mm (wash)	-0.25 mm	0.25 to 0.5 mm	0.5 to 1.0 mm	*1.0 to 2.0 mm
04JR-MA-133	583.62	238.2	0.02	345.4	100	345.4	3.48	318.1	22.9	0.9	0.02
04JR-MA-134	345.8	286.4	1	58.4	100	58.4	2.4	53.3	2.6	0.1	0.00
04JR-MA-135	454.2	354	1.5	98.7	100	98.7	1.04	94.3	3.3	0.06	0.00
04JR-MA-136	566.9	426.7	4.8	135.4	100	135.4	3.6	88	39	4.7	0.10
04JR-MA-137	336.9	246.3	1.6	89	100	89	0.88	87.1	1	0.02	0.00
04JR-MA-138	708.5	544.1	16.3	148.1	100	148.1	4	94.2	27.9	17.5	4.50
04JR-MA-139	502.1	449.3	3.4	49.4	100	49.4	1.9	36.8	8.5	2	0.20
04JR-MA-140	873.7	617.5	16.6	239.6	100	239.6	11	139.4	72.2	14.6	2.40
04JR-MA-141	835.6	432	9.6	394	100	394	8.8	300.2	66.8	15.1	3.10
04JR-MA-142	715	452.7	3.3	259	100	259	5.5	207.3	36.3	9.3	0.60
04JR-MA-143	1045.9	578.4	62.7	404.8	50	202.4	3.5	100.3	75.6	16.4	6.60
04JR-MA-144	437.4	307.3	4.1	126	100	126	3.5	113.3	8	1.1	0.10
04JR-MA-145	883.1	502.4	4.7	376	50	188	11.1	92.5	68.7	14.6	1.10
04JR-MA-146	498.9	386.1	3.9	108.9	100	108.9	2.2	86.5	12	5.4	2.80
04JR-MA-147	688.5	448.2	31.9	208.4	50	104.2	2.1	37.4	38.3	21.7	4.70
04JR-MA-148	407.6	294.1	5	108.5	100	108.5	4.4	77.7	18.6	6.4	1.40
04JR-MA-149	702.8	513.6	4.3	184.9	100	184.9	0.9	176.6	6.7	0.6	0.10
04JR-MA-150	797	496.9	0.1	300	100	300	1.8	277.8	18.9	1.4	0.10
04JR-MA-151	488.3	388.8	3.9	95.6	100	95.6	2.1	69.4	17.4	6.2	0.50
04JR-MA-152	715.9	543.8	2.4	169.7	100	169.7	0.27	168.3	0.9	0.2	0.03
04JR-MA-153	481.8	416.1	0.8	64.9	100	64.9	1.4	53	8.3	2.1	0.10
04JR-MA-154	427	405	0.2	21.8	100	21.8	2.4	6.7	10.2	2.4	0.10
04JR-MA-155	479.8	429.6	0.1	50.1	100	50.1	2.6	26.1	17.9	3.3	0.20
04JR-MA-156	753.7	448.7	68.9	236.1	100	236.1	7.6	134.5	60.9	27	6.10
04JR-MA-157	710.9	561.6	12.1	137.2	100	137.2	6.4	74.9	44.8	10.1	1.00
04JR-MA-158	1002.3	483.1	37.9	481.3	100	481.3	2.8	461.9	11.5	3.7	1.40
04JR-MA-159	1055.4	587.8	32	435.6	50	217.8	10.55	132.2	57.5	14.7	2.90
04JR-MA-160	698.9	579.9	0.3	118.7	100	118.7	6.7	76	31.9	3.7	0.40
04JR-MA-161	1177.3	746	30.1	401.2	50	200.6	8.75	95.85	71.3	19.5	5.20
04JR-TM-001	596.2	434.4	21.9	139.9	100	139.9	0.9	118.4	15.2	4.5	0.90
04JR-TM-002	675.3	518.4	38	118.9	100	118.9	1	98.8	13.5	4.8	0.80
04JR-TM-003	538.4	488.9	8.4	41.1	100	41.1	1	24.8	10.2	4.4	0.70
04JR-TM-004	549	515.1	3.9	30	100	30	0.6	23.8	4.4	1	0.20
04JR-TM-005	561.3	462.5	23.2	75.6	100	75.6	2.3	32.5	23.5	15.1	2.20
04JR-TM-006	511.2	458	7	46.2	100	46.2	0.9	24.9	15.1	4.7	0.60
04JR-TM-007	507.7	471.1	7.2	29.4	100	29.4	0.4	24.9	3.2	0.8	0.10
04JR-TM-008	545.1	485.1	9.3	50.7	100	50.7	0.8	43.5	4.1	1.9	0.40
04JR-TM-009	657.2	637.7	3.5	16	100	16	0.26	13.9	1.5	0.3	0.04
04JR-TM-010	510.1	463.1	8.2	38.8	100	38.8	3.1	29.7	3.1	2.1	0.80
04JR-TM-011	366.3	357.9	1.6	6.8	100	6.8	0.3	5.6	0.8	0.1	0.00
04JR-TM-012	492.2	480.6	2.2	9.4	100	9.4	0.42	6.4	1.9	0.6	0.08
04JR-TM-013	442.2	425.9	2.9	13.4	100	13.4	0.7	9.2	2.6	0.8	0.10
04JR-TM-014	1061.7	944.4	9.7	107.6	100	107.6	5.9	79	18.1	4.2	0.40
04JR-TM-015	1274.5	731.7	52.9	489.9	100	489.9	7.6	372.8	88.9	17.8	2.80

Sample Number	<2.0 mm Table Concentrate										
		Heavy Liquid Separation S.G 3.20									
				Nonferromagnetic Fraction							
					Processed Split						
	Total	Heavy Liquid Lights	Total Mag	Total	%	Weight	<0.25 mm (wash)	-0.25 mm	0.25 to 0.5 mm	0.5 to 1.0 mm	*1.0 to 2.0 mm
04JR-TM-016	561.2	463.3	10.8	87.1	100	87.1	1.1	70	12.1	3.6	0.30
04JR-TM-017	547.5	525.2	3.9	18.4	100	18.4	1	12.2	4	1	0.20
04JR-TM-018	964.9	537.7	57.3	369.9	100	369.9	7.5	297.4	50.6	12.7	1.70
04JR-TM-019	1156.7	740.2	52.2	364.3	100	364.3	6.4	267.7	64.3	21.1	4.80
04JR-TM-020	549.7	504	13.8	31.9	100	31.9	3.5	16.3	8.2	3.6	0.30
04JR-TM-021	664	583.4	4.6	76	100	76	7.4	60.3	5.9	1.9	0.50
04JR-TM-022	956.3	536.7	71.5	348.1	100	348.1	9.2	281.1	48.5	7.4	1.90
04JR-TM-023	990.8	700.5	16.5	273.8	50	136.9	2.1	45.8	70.4	17.8	0.80
04JR-TM-024	1197.2	645.6	78	473.6	50	236.8	9.2	172.4	47.1	6.4	1.70
04JR-TM-025	571.9	433.2	15.5	123.2	100	123.2	6.4	80.4	22.9	10.7	2.80
04JR-TM-026	705.3	501.8	6.2	197.3	100	197.3	8.2	166.5	18.8	3.3	0.50
04JR-TM-027	826.1	531	34.9	260.2	50	130.1	4.3	32.3	64.6	27.3	1.60
04JR-TM-028	500.2	416.2	11.1	72.9	100	72.9	4.3	54.8	9.4	3.3	1.10
04JR-TM-029	798.4	744.7	1.4	52.3	100	52.3	1.5	23.8	13.5	9.1	4.40
04JR-TM-030	790.1	781.2	0.9	8	100	8	3	2.6	1.4	0.8	0.20
04JR-TM-031	815.9	675.3	12.7	127.9	100	127.9	4.6	107.1	10	4.1	2.10
04JR-TM-032	747.2	600.5	15.7	131	100	131	5.6	107.3	14.2	3.4	0.50
04JR-TM-033	492.3	444.4	6.7	41.2	100	41.2	4.1	14	13.4	7.7	2.00
04JR-TM-034	967.8	701.8	34.1	231.9	100	231.9	8.5	180	28.9	11.1	3.40
04JR-TM-035	1030.7	838	28.4	164.3	100	164.3	7.5	120.5	27.6	6.8	1.90
04JR-TM-036	641.4	532.7	18.2	90.5	100	90.5	7.3	43.2	27	11.2	1.80
04JR-TM-037	546.5	496.6	8	41.9	100	41.9	2	30.6	6.7	2	0.60
04JR-TM-038	698.5	620.7	8.1	69.7	100	69.7	3.2	52.8	9.7	3.2	0.80
04JR-TM-039	800.3	509.3	61	230	100	230	14.9	142.8	46.1	20.5	5.70
04JR-TM-040	718.8	435.7	81.6	201.5	100	201.5	4.7	170.8	20.4	4.8	0.80
04JR-TM-041	845.4	460.8	74.1	310.5	100	310.5	17.5	170	97.9	19.6	5.50
04JR-TM-042	989.2	512	71.1	406.1	100	406.1	14.4	250.7	102.4	28.4	10.20
04JR-TM-043	764.8	455.5	17.8	291.5	100	291.5	9.3	233	43.1	5.7	0.40
04JR-TM-044	1292.9	906.4	48.4	338.1	100	338.1	5.9	308.4	16.4	5.8	1.60
04JR-TM-045	495.6	322.8	20.4	152.4	100	152.4	8.59	124.1	18.9	0.8	0.01
04JR-TM-046	785.1	507.6	86.3	191.2	100	191.2	11.1	153	23.7	3.1	0.30
04JR-TM-047	597.3	584.6	0.1	12.6	100	12.6	1.6	4.3	3	2.8	0.90
04JR-TM-048	247.5	243	0.2	4.3	100	4.3	0	4.1	0.2	0	0.00
04JR-TM-049	418.8	406.1	2.4	10.3	100	10.3	0.3	8.6	1	0.3	0.10
04JR-TM-050	198.3	195.4	0.3	2.6	100	2.6	0.06	2.2	0.3	0.04	0.00
04JR-TM-051	1043.1	701.1	45.4	296.6	100	296.6	10	177.6	84.2	19.5	5.30
04JR-TM-052	576.2	398.9	13.8	163.5	100	163.5	8	121.1	28.5	4.5	1.40
04JR-TM-053	370.1	366.1	0.3	3.7	100	3.7	6E-16	3.5	0.2	0	0.00
04JR-TM-054	486.5	180.7	27.6	278.2	100	278.2	6.5	172.8	61	26.7	11.20
04JR-TM-055	720.7	468.3	32.1	220.3	100	220.3	5.2	173	37.2	4.3	0.60
04JR-TM-056	875.3	342.6	21.9	510.8	100	510.8	7.9	451.8	46.6	4.2	0.30
04JR-TM-057	915.8	652.7	17.4	245.7	100	245.7	3.3	199.7	34.4	6.7	1.60
04JR-TM-058	495.5	362.2	16.4	116.9	100	116.9	5.8	88.5	18.1	4	0.50
04JR-TM-059	687.5	595.7	17	74.8	100	74.8	4	56	10.8	3.2	0.80

	<2.0 mm Table Concentrate										
		Heavy Liquid Separation S.G 3.20									
				Nonferromagnetic Fraction							
					Processed Split						
Sample Number	Total	Heavy Liquid Lights	Total Mag	Total	%	Weight	<0.25 mm (wash)	-0.25 mm	0.25 to 0.5 mm	0.5 to 1.0 mm	*1.0 to 2.0 mm
04JR-TM-060	533.9	358.7	19.6	155.6	100	155.6	2.68	140.9	11.2	0.8	0.02
04JR-TM-061	477.7	362.6	0.7	114.4	100	114.4	10	82.3	5.5	7.2	9.40
04JR-TM-062	152.7	89.2	9.5	54	100	54	0.85	52.2	0.9	0.05	0.00
04JR-TM-063	368.3	286.5	9.5	72.3	100	72.3	1.9	60.5	8.3	1.3	0.30
04JR-TM-064	784.9	538.2	28	218.7	100	218.7	1.3	180.6	28.3	7.2	1.30
04JR-TM-065	1066.2	574.1	78.9	413.2	25	103.3	1.2	46.1	44.3	10.2	1.50
04JR-TM-066	633.5	303.6	61.3	268.6	100	268.6	4.5	227.5	30.1	5.7	0.80
04JR-TM-067	762	423.7	64.3	274	100	274	3	131.6	118.8	17.7	2.90
04JR-TM-068	853	397.3	70.5	385.2	100	385.2	6.9	324.5	40	9.7	4.10
04JR-TM-069	1452.9	845.3	0.4	607.2	100	607.2	3.2	593.2	8.5	1.1	1.20
04JR-TM-070	704	463.4	23.5	217.1	100	217.1	5.7	174.5	25	10	1.90
04JR-TM-071	466.1	218.4	28.6	219.1	100	219.1	2.3	201.1	13.1	2.3	0.30
04JR-TM-072	226.6	212.6	1.4	12.6	100	12.6	0.4	10.3	1.1	0.6	0.20
04JR-TM-073	685.3	368.4	35.6	281.3	100	281.3	3.9	223.7	36.4	12.5	4.80
04JR-TM-074	608.2	391.1	21	196.1	100	196.1	9.2	148.4	28.6	8.3	1.60
04JR-SG-001	453.4	304.5	12.4	136.5	100	136.5	3.1	117.4	13.5	2.1	0.40
04JR-SG-002	863.4	380	23.7	459.7	100	459.7	4.7	439	14.8	1.1	0.10
04JR-SG-003	747.8	581.1	22.3	144.4	100	144.4	6.2	74	54.4	9.3	0.50
04JR-SG-004	827.8	530.5	36	261.3	100	261.3	6.6	184.7	46.6	16	7.40
04JR-SG-005	861.3	514	43.2	304.1	100	304.1	3	294.3	6	0.6	0.20
04JR-SG-006	537.2	405.1	13.5	118.6	100	118.6	3.9	91.5	15.8	4.5	2.90
04JR-SG-007	592.5	370.4	23	199.1	100	199.1	6.4	100.6	66.3	19.7	6.10
04JR-SG-008	701.6	428.1	46.7	226.8	100	226.8	7.5	115.7	66.3	28.1	9.20
04JR-SG-009	831.5	335.3	83	413.2	100	413.2	6.85	385.3	20.2	0.8	0.05
04JR-SG-010	819.4	585.4	28.1	205.9	100	205.9	9.2	145.4	38.6	9.5	3.20
04JR-SG-011	819.9	477.7	40.4	301.8	100	301.8	9	249.8	34.6	7.1	1.30
04JR-SG-012	579	337.6	19.9	221.5	100	221.5	13.7	121.9	79	5.1	1.80
04JR-SG-013	570.1	302.8	23.5	243.8	100	243.8	5	221.2	13.3	3.3	1.00
04JR-SG-014	377.2	261.6	13.2	102.4	100	102.4	5.6	45.8	43.9	5.9	1.20
04JR-SG-015	576.6	306.3	22.3	248	100	248	5.4	191	41	7.7	2.90

* Values greater than 0.1 g were weighed only to one decimal place; the zero was added in the second decimal position to facilitate column alignment

** Accidentally combined the heavy minerals from disqualified "muck" sample No. 038 with the heavy minerals from Sample No. 035.

Approximately 21 g of 186.8 grams of -0.25 mm and 0.04 g of 3.3 grams of +0.25 mm HMC are from the "muck" sample. A replacement sample was collected for No. 038.

Appendix 8

Metamorphic/Magmatic Massive Sulphide Indicator Mineral Data Picking Results

Abbreviations:

Chr	Chromite
Cor	Corundum
Cpy	Chalcopyrite
Cr-Diop	Chromian Diopsite
Cr-Gros	Chromium Grossular
Fay	Fayalite
gr	grain(s)
Gth	Goethite
Ky	Kyanite
Mn-Epi	Manganese Epidote
Moly	Molybdenite
Opx	Orthopyroxene
Py	Pyrite
RedRut	Red Rutile
sap	Sapphire Corundum
Sill	Sillimanite
Sp	Spinel
Sps	Spessartine
St	Staurolite
Tr	trace
Uva	Uvarovite

Shaded samples are ones identified as having heavy mineral/metal contamination.

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-001	0.1 (~125 gr)	0.2% arsenopyrite (~250 gr) Tr arsenolite (2 gr) Tr zaratite (14 gr) Tr barite (~40 gr)	Tr (~50 gr)	Tr	5 blue, blue-green	Tr synthetic corundum (~100 gr; sandblasting grit; contamination) Tr low-Cr diopside (~125 gr)	Tr (~80 gr)	0	0	Tr	0	Tr	0	0	0
MA-002	Tr (9 gr)	Tr arsenopyrite (1 gr) Tr barite (~40 gr)	Tr (4 gr)	2	0	Tr low-Cr diopside (4 gr)	Tr (4 gr)	0	Tr	0	0	0	Tr	0	0
MA-003	Tr (10 gr)	Tr barite (~40 gr)	Tr (10 gr)	Tr	0	Tr low-Cr diopside (2 gr)	0	0	0	Tr	0	0	Tr	0	0
MA-004	0	0	Tr (3 gr)	0	1 purple	0	0	0	Tr	0	0	0	0	0	0
MA-005	Tr (11 gr)	Tr arsenopyrite (5 gr) Tr barite (10 gr)	1 (~200 gr)	Tr	2 pale blue	0	0	0	0	1	0	0	0	0	0
MA-006	Tr (4 gr)	0	Tr (3 gr)	0	0	Tr low-Cr diopside (2 gr)	0	0	0	Tr	0	0	Tr	0	0
MA-007	Tr (3 gr)	Tr barite (20 gr)	Tr (~25 gr)	Tr	6 blue-green, purple	Tr chondrodite (3 gr) Tr Mn-epidote (1 gr) Tr low-Cr diopside (1 gr)	Tr (1 gr)	0	0	0	0	0	Tr	0	0
MA-008	Tr (8 gr)	1% barite (~300 gr)	0.3 (~100 gr)	0	0	0	0	0	0	0	0	0	0	0	0
MA-009	0	0	Tr (1 gr)	0	0	Tr chondrodite (4 gr) Tr Mn-epidote (2 gr) Tr ruby corundum (1 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	Tr	0	0
MA-010	0	0	0	0	0	0	0	0	0	0	0	0	Tr	0	0
MA-011	0	0	Tr (3 gr)	0	0	0	0	0	0	0	0	0	Tr	0	0
MA-012	0	0	Tr (3 gr)	0	2 pale blue	Tr low-Cr diopside (5 gr)	0	Tr	0	Tr	0	0	Tr	0	0
MA-013	Tr (3 gr)	Tr barite (1 gr)	Tr (~100 gr)	0	1 green gahnite; 1 green spinel	Tr low-Cr diopside (1 gr)	0	0	0	0	0	0	0	0	0
MA-014	0	Tr fluorite (1 gr)	Tr (~12 gr)	0	0	0	0	0	0	0	0	0	Tr	0	0
MA-015	0	0	Tr (2 gr)	0	1 green hercynite; 7 pale blue-green, pale blue spinel	0	0	0	0	0	0	Tr	Tr	0	0

	Sulphide/Arsenide + Related				Mg/Mn/Al/Cr Minerals										
	Minerals 0.25-0.5 mm				0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-016	Tr (6 gr)	10% barite (~10000 gr)	Tr (5 gr)	0	3 blue-green, pale purple, pale blue	Tr low-Cr diopside (8 gr)	0	Tr	0	Tr	0	0	1	0	0
MA-017	Tr (11 gr)	0	0	0	2 pale blue, pale blue-green	0	0	Tr	0	Tr	0	0	0	0	0
MA-018	0	0	0	0	1 pale purple	0	0	Tr	0	0	0	0	0	0	0
MA-019	0	Tr barite (~80 gr)	Tr (5 gr)	0	5 pale blue, pale blue-green	Tr Mn-epidote (3 gr)	0	Tr	0	0	0	0	0	0	0
MA-020	0	0	0	0	7 blue-green	Tr Mn-epidote (3 gr) Tr sapphire corundum (1 gr) Tr low-Cr diopside (3 gr)	0	Tr	0	Tr	0	Tr	Tr	0	0
MA-021	Tr (1 gr)	0.5% barite (~200 gr)	0.1 (~80 gr)	0	1 pale blue	Tr chondrodite (3 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	Tr	0	0
MA-022	Tr (1 gr)	Tr barite (2 gr)	0.2 (~80 gr)	0	2 blue, pale blue	Tr low-Cr diopside (3 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
MA-023	Tr (1 gr)	0	Tr (2 gr)	0	4 blue-green, pale blue	Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	0	0	0
MA-024	Tr (11 gr)	4% barite (~3000 gr)	Tr (5 gr)	0	4 pale blue, purple	Tr chondrodite (8 gr) Tr low-Cr diopside (4 gr)	0	Tr	0	Tr	0	0	1	0	0
MA-025	0	0	0	0	2 green, pale blue	0	0	0	0	Tr	0	0	0	0	0
MA-026	Tr (2 gr)	Tr barite (~40 gr)	Tr (5 gr)	0	15 pale blue, pale purple	Tr chondrodite (5 gr) Tr Mn-epidote (1 gr) Tr low-Cr diopside (3 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-027	0	0	Tr (2 gr)	0	0	Tr Mn-epidote (1 gr)	0	Tr	0	0	0	0	0	0	0
MA-028	Tr (13 gr)	0	0.5 (~500 gr)	0	7 pale blue, pale purple	Tr chondrodite (3 gr) Tr low-Cr diopside (2 gr)	0	Tr	0	0	0	0	0	0	0
MA-029	0	0	Tr (1 gr)	0	7 blue-green gahnite; 20 blue-green, pale blue, grey, colourless spinel	0	0	Tr	Tr	Tr	0	0	0	0	0

	Sulphide/Arsenide + Related				Mg/Mn/Al/Cr Minerals										
	Minerals 0.25-0.5 mm				0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-030	0	0	0	0	3 pale blue-green, pale blue, black	Tr Mn-epidote (2 gr)	0	0	Tr	Tr	0	0	0	0	0
MA-031	0	Tr barite (9 gr)	Tr (4 gr)	Tr	0	0	0	Tr	0	0	0	0	Tr	Tr (1 gr; see KIM data)	0
MA-032	Tr (6 gr)	0	Tr (~15 gr)	Tr	14 blue-grey, grey-green, grey	Tr Mn-epidote (2 gr) Tr low-Cr diopside (8 gr)	0	Tr	0	0	0	0	Tr	0	0
MA-033	0	0	Tr (8 gr)	0	0	0	0	0	0	Tr	0	0	0	0	0
MA-034	Tr (3 gr)	0	Tr (~15 gr)	0	35 blue, pale blue	Tr chondrodite (3 gr) Tr sapphire corundum (1 gr) Tr low-Cr diopside (10 gr)	0	Tr	0	0	0	0	0	0	0
MA-035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JR-MA-035/038	Tr (2 gr)	0	Tr (~15 gr)	0	0	0	0	Tr	0	Tr	0	0	0	0	0
MA-036	0	Tr barite (3 gr)	Tr (1 gr)	0	3 pale blue, pale purple	Tr Mn-epidote (1 gr) Tr low-Cr diopside (6 gr)	0	Tr	0	0	0	0	0	0	0
MA-037	0	0	0.2 (~40 gr)	Tr	0	0	Tr (1 gr)	0	0	Tr	0	0	Tr	0	0
MA-038	0	0	Tr (1 gr)	0	7 pale blue, pale purple, blue-green	Tr chondrodite (13 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-039	0	0	Tr (2 gr)	0	13 pale blue	Tr chondrodite (1 gr)	Tr (1 gr)	Tr	Tr	Tr	0	0	0	0	0
MA-040	Tr (2 gr)	0	Tr (~20 gr)	15	10 blue-grey, grey	0	0	0	0	0	0	0	Tr	0	0
MA-041	Tr (4 gr)	Tr arsenopyrite (2 gr)	Tr (10 gr)	0	1 blue-green gahnite; 9 blue, pale blue spinel	Tr chondrodite (1 gr) Tr low-Cr diopside (2 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-042	0.3 (39 gr)	0	0.1 (~20 gr)	0	0	Tr low-Cr diopside (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-043	0	0	Tr (~20 gr)	0	2 blue-grey	0	0	0	0	Tr	0	0	0	0	0
MA-044	Tr (6 gr)	Tr arsenopyrite (1 gr) Tr barite (18 gr)	1 (~200 gr)	0	8 pale blue,pale blue-green, blue-green, blue	0	Tr (1 gr)	0	0	Tr	0	0	0	0	0
MA-045	Tr (5 gr)	0	Tr (5 gr)	0	2 pale blue	0	0	0	0	Tr	0	0	0	0	0

Sample Number	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-046	0	0	1 (~800 gr)	0	2 pale blue	Tr chondrodite (1 gr) Tr low-Cr diopside (3 gr)	0	Tr	0	Tr	0	0	Tr	0	0
MA-047	0	0	0	0	2 pale blue	Tr chondrodite (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-048	Tr (8 gr)	0	Tr (~25 gr)	0	8 blue-green, pale blue, blue-grey	Tr chondrodite (7 gr) Tr low-Cr diopside (3 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-049	0	0	0	0	1 grey	0	0	0	0	Tr	0	0	0	0	0
MA-050	**0.3 (34 gr)**	**0**	**0.5 (~60 gr)**	**0**	**2 blue grey**	**Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MA-051	0	0	Tr (~30 gr)	0	9 blue grey, grey	Tr low-Cr diopside (7 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-052	Tr (5 gr)	Tr fluorite (2 gr)	Tr (~15 gr)	0	20 pale blue, grey, blue-green	Tr chondrodite (5 gr)	Tr (1 gr)	0	0	Tr	0	0	0	0	0
MA-053	Tr (4 gr)	0	Tr (~15 gr)	0	1 blue-green gahnite; 10 pale blue, grey, blue-green spinel	0	0	0	0	Tr	0	0	0	0	0
MA-054	0	0	Tr (1 gr)	0	0	0	0	Tr	0	Tr	0	0	0	0	0
MA-055	**Tr (5 gr)**	**Tr barite (6 gr)**	**Tr (10 gr)**	**Tr**	**1 pale blue**	**0**	**0**	**Tr**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-056	Tr (2 gr)	Tr barite (~20 gr)	0.2 (~200 gr)	Tr	1 blue-grey	Tr chondrodite (1 gr) Tr Mn-epidote (1 gr) Tr low-Cr diopside (8 gr)	0	Tr	0	Tr	0	0	Tr	0	0
MA-057	**0**	**0**	**Tr (1 gr)**	**0**	**0**	**0**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MA-058	**Tr (13 gr)**	**Tr arsenopyrite (1 gr) Tr barite (1 gr)**	**Tr (~30 gr)**	**0**	**2 pale blue, pale purple**	**Tr low-Cr diopside (6 gr)**	**0**	**Tr**	**0**	**Tr**	**0**	**0**	**Tr**	**0**	**0**
MA-059	0	Tr arsenopyrite (1 gr)	1 (5 gr)	Tr	0	Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	Tr	0	0
MA-060	**Tr (17 gr)**	**Tr barite (56 gr)**	**0**	**0**	**3 blue-grey, green**	**Tr low-Cr diopside (3 gr)**	**0**	**Tr**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-061	0	0	Tr (2 gr)	0	1 blue-green	0	0	Tr	Tr	Tr	0	0	0	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-062	0	0	Tr (~15 gr)	0	1 black hercynite (see KIM notes)	Tr chondrodite (2 gr) Tr low-Cr diopside (5 gr)	0	Tr	0	0	0	0	0	0	0
MA-063	0	0	0	0	2 blue-green, colourless	0	0	Tr	0	0	0	0	0	0	0
MA-064	Tr (1 gr)	Tr barite (2 gr)	0.1 (~60 gr)	0	6 pale blue, pale purple, blue-green	Tr chondrodite (3 gr) Tr ruby corundum (1 gr) Tr low-Cr diopside (5 gr)	0	Tr	0	0	0	0	1	0	0
MA-065	0	0	Tr (3 gr)	0	0	Tr low-Cr diopside (2 gr)	0	Tr	0	0	0	0	Tr	0	0
MA-066	Tr (1 gr)	0	Tr (1 gr)	0	3 blue-green, pale blue-grey	Tr low-Cr diopside (3 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-067	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MA-068	Tr (3 gr)	0	Tr (~12 gr)	0	22 blue-green, pale blue, grey	Tr Mn-epidote (1 gr)	0	0	0	Tr	0	0	0	0	0
MA-069	Tr (1 gr)	Tr molybdenite (1 gr)	0.1 (~150 gr)	0	13 blue-grey, pale purple	Tr Mn-epidote (1 gr) Tr low-Cr diopside (8 gr)	Tr (2 gr)	Tr	0	0	0	0	Tr	0	0
MA-070	0	0	0	0	1 blue-green gahnite; 6 pale blue, grey, purple, blue-green spinel	Tr low-Cr diopside (3 gr)	Tr (2 gr)	Tr	0	0	0	0	Tr	0	0
MA-071	Tr (2 gr)	Tr molybdenite (1 gr)	Tr (~15 gr)	0	13 blue-green, pale blue, pale purple	Tr low-Cr diopside (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-072	0	0	Tr (8 gr)	0	0	Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	Tr	0	0
MA-073	0	0	Tr (~10 gr)	0	6 grey-blue, pale grey, pale purple	Tr low-Cr diopside (4 gr)	Tr (2 gr)	Tr	0	Tr	0	0	Tr	0	0
MA-074	0	Tr barite (1 gr)	Tr (8 gr)	0	2 pale blue, pale purple	0	Tr (1 gr)	Tr	0	Tr	0	0	0	0	0
MA-075	0	0	0	0	11 pale blue, blue-grey, blue-green	Tr low-Cr diopside (4 gr)	0	Tr	0	0	0	0	Tr	0	0
MA-076	0	0	0	0	0	0	0	Tr	0	Tr	0	0	0	0	0
MA-077	0	0	0	0	17 blue-green gahnite; 1 blue-green hercynite; 26 pale blue, pale purple, grey, blue-green spinel	0	0	Tr	0	Tr	0	0	0	0	0
MA-078	0	0	1 (10 gr)	0	1 purple	0	0	0.5	0	0	0	0	0	0	0
MA-079	Tr (1 gr)	0	0	0	4 pale blue-green	0	0	Tr	0	Tr	0	0	0	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	*# Grains + Colour Spinel*	*Misc. Prime* MMSIMs	*% Red* Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-080	Tr (1 gr)	0	0	0	4 pale purple, pale blue, grey	Tr chondrodite (3 gr) Tr low-Cr diopside (4 gr)	0	Tr	0	Tr	0	0	0.5	0	0
MA-081	0	0	0	0	3 blue, pale blue	Tr chondrodite (3 gr) Tr Cr-grossular (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-082	0	0	0.1 (5 gr)	Tr	1 blue-green gahnite	0	0	Tr	Tr	Tr	0	0	0	0	0
MA-083	0	0	Tr (2 gr)	0	2 blue-green	0	0	Tr	Tr	Tr	0	0	0	0	0
MA-084	0	0	Tr (7 gr)	0	3 pale blue, blue-green	Tr chondrodite (2 gr) Tr low-Cr diopside (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-085	0	Tr molybdenite (1 gr)	0	0	1 blue-green gahnite; 11 pale blue, grey spinel	Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-086	**0**	**0**	**Tr (~40 gr)**	**0**	**0**	**Tr low-Cr diopside (2 gr)**	**Tr (3 gr)**	**Tr**	**Tr**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-087	0	Tr barite (2 gr)	0	0	2 pale blue-grey	0	0	0	0	0	0	0	0	0	0
MA-088	0	0	Tr (5 gr)	0	4 blue-green gahnite; 31 pale blue, blue-green, pale pink spinel	Tr chondrodite (1 gr) Tr sapphire corundum (1 gr) Tr low-Cr diopside (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-089	**0**	**0**	**2 (~500 gr)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MA-090	**Tr (1 gr)**	**Tr barite (21 gr)**	**Tr (~10 gr)**	**Tr**	**9 pale blue, blue-green**	**Tr chondrodite (5 gr) Tr low-Cr diopside (1 gr)**	**0**	**Tr**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-091	**0**	**Tr barite (1 gr) Tr fluorite (1 gr)**	**3 (~300 gr)**	**0**	**2 pale blue**	**0**	**0**	**0**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-092	**0**	**0**	**Tr (5 gr)**	**0**	**2 pale blue**	**0**	**0**	**Tr**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-093	0	0	Tr (1 gr)	0	2 pale blue, blue-green	0	0	Tr	0	Tr	0	0	0	0	0
MA-094	**Tr (9 gr)**	**Tr barite (8 gr)**	**Tr (~20 gr)**	**0**	**1 pale blue**	**0**	**0**	**Tr**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
MA-095	0	0	Tr (~15 gr)	0	0	0	0	0	0	0	0	0	0	0	0
MA-096	Tr (5 gr)	Tr barite (1 gr)	0.1 (~50 gr)	0	9 pale blue	0	0	Tr	0	Tr	0	0	0	0	0
MA-097	Tr (4 gr)	0	Tr (5 gr)	0	11 pale blue, pale blue-green, grey	0	0	Tr	0	Tr	0	0	0	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-098	0	0	Tr (~15 gr)	0	3 pale blue, pale blue-green	Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)	Tr (1 gr)	Tr	0	Tr	0	0	Tr	0	0
MA-099	Tr (46 gr)	Tr arsenopyrite (1 gr) Tr molybdenite (2 gr)	15 (~7500 gr)	0	15 pale blue, grey, blue-green	Tr chondrodite (4 gr) Tr low-Cr diopside (3 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-100	Tr (4 gr)	Tr arsenopyrite (1 gr) Tr molybdenite (3 gr) Tr barite (~800 gr)	Tr (~50 gr)	0	16 pale blue, pale blue-green, pink, grey, blue-green	Tr chondrodite (1 gr)	Tr (3 gr)	Tr	Tr	Tr	0	0	0	0	0
MA-101	Tr (2 gr)	Tr molybdenite (5 gr)	Tr (4 gr)	0	1 blue gahnite; ~20 red, pink Cr-spinel; 1% (~1000 gr) pale blue, blue-grey, blue-green, green spinel	Tr chondrodite (~100 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-102	Tr (1 gr)	Tr barite (1 gr)	Tr (~12 gr)	0	4 pale blue, pale blue-green	Tr low-Cr diopside (2 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-103	Tr (4 gr)	Tr molybdenite (1 gr)	Tr (~40 gr)	0	22 pale blue, pale purple, grey	Tr chondrodite (1 gr) Tr low-Cr diopside (3 gr)	Tr (1 gr)	Tr	Tr	Tr	0	0	1	0	0
MA-104	0	0	0.2 (~200 gr)	Tr	13 pale blue, blue-green	Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)	Tr (4 gr)	Tr	Tr	0	0	0	0	0	0
MA-105	Tr (1 gr)	Tr barite (1 gr)	0.1 (~40 gr)	0	1 pale blue-green	Tr chondrodite (2 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-106	0	0	Tr (~20 gr)	0	1 pale blue	Tr low-Cr diopside (2 gr)	0	Tr	0	0	0	0	Tr	0	0
MA-107	Tr (4 gr)	Tr sphalerite (2 gr) Tr galena (1 gr) Tr molybdenite (1 gr)	0.5 (~40 gr)	0	17 pale purple, pale blue, blue-green, blue-grey, pink	Tr corundum (4 gr) Tr ruby corundum (1 gr) Tr sapphire corundum (3 gr) Tr low-Cr diopside (2 gr)	0	1	0	Tr	0	0	Tr	0	0

Sample Number	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-108	Tr (3 gr)	0	Tr (~20 gr)	Tr	9 pale blue	Tr chondrodite (3 gr) Tr Mn-epidote (1 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-109	Tr (1 gr)	0	Tr (~15 gr)	0	1 blue-green gahnite; ~60 pale blue, pale purple, grey spinel	Tr chondrodite (1 gr) Tr low-Cr diopside (4 gr)	Tr (2 gr)	Tr	0	0	0	0	Tr	0	0
MA-110	Tr (1 gr)	0	Tr (~40 gr)	0	10 pale blue-grey, grey-green	Tr chondrodite (2 gr) Tr Mn-epidote (5 gr)	0	0	0	0	0	0	0	0	0
MA-111	0	Tr barite (1 gr)	Tr (5 gr)	0	1 blue-green gahnite; 7 pale blue, pale blue-green, blue-green spinel	Tr ruby corundum (1 gr)	0	Tr	Tr	0	0	0	0	0	0
MA-112	0	Tr molybdenite (1 gr) Tr barite (2 gr)	0	0	2 red Cr-spinel; ~200 pale blue, pale blue-green, blue-green spinel	Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	0	0	0
MA-113	0	0	0	2	1 green gahnite; 1 pale blue spinel	Tr Cr-grossular (1 gr)	Tr (2 gr)	0	0	Tr	0	0	0	0	0
MA-114	Tr (4 gr)	0	0.5 (~500 gr)	0	10 blue-grey, pale blue	Tr chondrodite (4 gr) Tr Mn-epidote (2 gr) Tr corundum (2 gr) Tr ruby corundum (1 gr) Tr sapphire corundum (1 gr) Tr low-Cr diopside (8 gr)	Tr (1 gr)	Tr	0	0	0	0	Tr	Tr (~80 gr; see KIM data)	0
MA-115	Tr (2 gr)	Tr barite (1 gr)	Tr (~15 gr)	0	~100 pale blue, pale blue-green, blue-green, pink	Tr chondrodite (1 gr) Tr low-Cr diopside (6 gr)	0	0	0	0	0	0	0	0	0
MA-116	Tr (1 gr)	Tr molybdenite (1 gr)	Tr (5 gr)	0	5 pale blue, pale purple	Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	0	0	0
MA-117	0	0	0	0	~80 pale blue, pale blue-green, green, pink, pale purple	Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	0	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-118	Tr (2 gr)	0	Tr (~20 gr)	0	5 pale blue, pale blue-green, blue-green	Tr chondrodite (4 gr)	0	0	0	0	0	0	0	0	0
MA-119	Tr (1 gr)	0	Tr (10 gr)	0	22 pale blue, pale purple, grey	Tr low-Cr diopside (3 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
MA-120	Tr (6 gr)	0	3 (~1500 gr)	0	5 pale blue, grey	Tr low-Cr diopside (1 gr)	Tr (1 gr)	0.5	0	0	0	0	0	0	0
MA-121	Tr (2 gr)	0	Tr (5 gr)	0	2% (~1500 gr) pale blue, grey, pale blue-green, pale purple	0	0	0	0	0	0	0	Tr	0	0
MA-122	0	0	Tr (1 gr)	0	5 blue, pale blue, blue-green	Tr low-Cr diopside (3 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
MA-123	Tr (1 gr)	Tr molybdenite (1 gr)	Tr (~50 gr)	0	1 blue-green gahnite; 0.1% (~200 gr) Cr-spinel; 1% (~2000 gr) pale blue, pale purple, grey, blue-green spinel	Tr chondrodite (13 gr)	0	Tr	0	0	0	0	0	0	0
MA-124	Tr (1 gr)	0	Tr (10 gr)	0	29 pale blue, pale purple, pale blue-green	Tr chondrodite (17 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
MA-125	0	Tr molybdenite (9 gr)	Tr (~25 gr)	0	29 pale blue, pale blue-green, pale purple, blue-green, green	Tr chondrodite (4 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
MA-126	Tr (17 gr)	0	Tr (3 gr)	0	38 pale blue-green, pale blue, pale purple	Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	0	0	0
MA-127	0	0	Tr (5 gr)	0	5 pink, pale blue, grey	Tr low-Cr diopside (3 gr)	0	Tr	Tr	Tr	0	0	Tr	0	0
MA-128	0	0	0	0	1 pale blue-green	0	0	Tr	0	Tr	0	0	0	0	0
MA-129	Tr (1 gr)	0	Tr (3 gr)	0	5 pale blue, pale blue-green	Tr chondrodite (5 gr)	0	Tr	0	0	0	0	0	0	0
MA-130	0	0	Tr (2 gr)	0	1 blue-green gahnite; 37 pale blue, pale purple, pale blue-green, blue-green	Tr chondrodite (1 gr) Tr low-Cr diopside (4 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
MA-131	Tr (5 gr)	0	Tr (5 gr)	0	0	Tr low-Cr diopside (1 gr)	0	3	Tr	Tr	0	0	Tr	0	0
MA-132	0	0	0	0	6 blue-grey, grey, black, colourless	0	Tr (1 gr)	0	0	0	0	0	0	0	0
MA-133	0	0	Tr (3 gr)	0	2 grey, pale purple	Tr low-Cr diopside (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0

Sample Number	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-134	Tr (1 gr)	0	Tr (2 gr)	0	0	Tr chondrodite (1 gr)	0	0	0.5	0	0	0	0.5	0	0
MA-135	0	0	0	0	0	Tr low-Cr diopside (2 gr)	0	0	0	0	0	0	0	0	0
MA-136	0	0	Tr (~50 gr)	0	3 pale blue, pale purple	Tr low-Cr diopside (7 gr)	Tr (2 gr)	0.5	0	0	0	0	0	0	0
MA-137	**Tr (1 gr)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**	**0**
MA-138	**0**	**Tr barite (2 gr)**	**2 (~800 gr)**	**0**	**4 pale blue-green, grey**	**Tr chondrodite (2 gr) Tr low-Cr diopside (3 gr)**	**Tr (6 gr)**	**Tr**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MA-139	Tr (1 gr)	0	1 (~200 gr)	0	0	Tr chondrodite (1 gr)	Tr (2 gr)	0	0	0	0	0	Tr	0	0
MA-140	0	Tr arsenopyrite (2 gr)	0.5 (~300 gr)	0	8 blue-grey, grey	Tr low-Cr diopside (7 gr)	Tr (8 gr)	0	0	0	0	0	Tr	0	0
MA-141	Tr (2 gr)	0	Tr (~10 gr)	0	28 pale blue, pale purple, pale blue-green, green	Tr chondrodite (3 gr) Tr Mn-epidote (1 gr) Tr low-Cr diopside (11 gr)	0	0	0	0	0	0	0	0	0
MA-142	Tr (1 gr)	0	Tr (3 gr)	0	18 pale blue, grey	Tr chondrodite (12 gr) Tr low-Cr diopside (10 gr)	Tr (2 gr)	Tr	0	0	0	0	0	0	0
MA-143	0	Tr fluorite (1 gr)	Tr (~60gr)	Tr	21 pale blue, grey	Tr chondrodite (17 gr) Tr low-Cr diopside (13 gr)	Tr (3 gr)	Tr	0	0	0	0	Tr	0	0
MA-144	0	0	Tr (5 gr)	0	2 pale blue-green, pale purple	Tr chondrodite (2 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
MA-145	0	0	0	0	8 pale blue, grey	Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	0	0	0
MA-146	**Tr (6 gr)**	**Tr acanthite (1 gr)**	**0.5 (~60 gr)**	**Tr**	**1 pale blue**	0	**Tr (1 gr)**	0	0	0	0	0	0	0	0
MA-147	**Tr (32 gr)**	**Tr barite (3 gr)**	**Tr (~30 gr)**	**0**	**1 blue-green gahnite; 15 pale blue, pale purple, blue-green, pink spinel**	**Tr chondrodite (1 gr)**	**Tr (5 gr)**	Tr	0	0	0	0	0	0	0
MA-148	0	0	10 (~1500 gr)	Tr	0	0	0	Tr	0	0	0	0	Tr	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
MA-149	**0**	**0**	**Tr (5 gr)**	**0**	**2 pale blue, green**	**Tr chondrodite (4 gr) Tr low-Cr diopside (2 gr)**	**0**	**Tr**	**0**	**0**	**0**	**0**	**Tr**	**0**	**0**
MA-150	0	0	Tr (1 gr)	0	23 green, blue-green, pale blue-green gahnite; 9 pale blue-green, blue-green, pale blue, pale purple spinel	Tr low-Cr diopside (1 gr)	0	Tr	Tr	Tr	0	0	0	0	0
MA-151	**0**	**Tr fluorite (3 gr)**	**0**	**0**	**3 pale blue, pale purple, blue-green**	**0**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MA-152	0	0	0	0	0	0	0	0	0	Tr	0	0	0	0	0
MA-153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MA-154	0	0	0	0	0	0	0	Tr	0	0	0	0	Tr	0	0
MA-155	0	0	Tr (9 gr)	0	0	0	0	Tr	Tr	0	0	0	2	0	0
MA-156	0	0	0.5 (~200 gr)	Tr	4 pale blue-green, colourless	Tr chondrodite (1 gr)	Tr (6 gr)	Tr	0	0	0	0	Tr	0	0
MA-157	0	0	0	0	8 blue-grey, purple, green	0	Tr (1 gr)	Tr	0	0	0	0	Tr	0	0
MA-158	0	0	Tr (~15 gr)	0	2 pale blue	0	0	Tr	0	0	0	0	Tr	0	0
MA-159	0	Tr arsenopyrite (1 gr)	0.2 (~100 gr)	0	8 blue-grey, green, purple, pale blue	Tr chondrodite (10 gr)	Tr (6 gr)	Tr	0	0	Tr	0	Tr	0	0
MA-160	Tr (6 gr)	0	Tr (~20 gr)	0	18 pale blue-green, pale blue, green, green, pale purple	Tr sapphire corundum (1 gr) Tr low-Cr diopside (6 gr)	0	Tr	0	0	0	0	Tr	0	0
MA-161	0	Tr fluorite (1 gr)	Tr (10 gr)	Tr	6 pale purple, blue-green, grey	Tr chondrodite (3 gr) Tr low-Cr diopside (1 gr)	0	Tr	0	0	0	0	Tr	0	0

TM-001	0	Tr barite (5 gr)	0	0	9 pale blue, blue	Tr chondrodite (3 gr) Tr low-Cr diopside (2 gr)	Tr (2 gr)	Tr	0	Tr	0	0	Tr	0	0
TM-002	0	0	0	0	1 pale blue	Tr chondrodite (2 gr)	0	0	Tr	Tr	0	0	Tr	0	0
TM-003	0	0	0	2	1 pale blue	Tr chondrodite (2 gr) Tr low-Cr diopside (1 gr)	Tr (1 gr)	Tr	Tr	0	0	0	0	0	0
TM-004	0	0	0	Tr	1 pale blue	Tr Mn-epidote (1 gr)	Tr (4 gr)	0	0	Tr	0	0	Tr	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
TM-005	Tr (8 gr)	0	0.1 (~60 gr)	Tr	5 pale blue, blue-green	Tr chondrodite (3 gr) Tr Mn-epidote (1 gr) Tr ruby corundum (1 gr) Tr low-Cr diopside (5 gr)	Tr (2 gr)	Tr	0	Tr	0	0	0	0	0
TM-006	0	0.2% barite (~80 gr)	Tr (2 gr)	0	5 pale blue	Tr chondrodite (4 gr)	Tr (9 gr)	0	0	0	0	0	0	0	0
TM-007	0	0	Tr (5 gr)	Tr	0	0	Tr (4 gr)	0	0	0	0	0	Tr	0	0
TM-008	0	0	Tr (~20 gr)	2	0	Tr chondrodite (1 gr)	0	0	0	0	0	0	0	0	0
TM-009	0	0	Tr (5 gr)	Tr	1 pale blue	0	0	0	0	0	0	0	0	0	0
TM-010	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0
TM-011	0	0	0	Tr	0	0	0	0	0	0	0	0	0	0	0
TM-012	0	0.1% barite (~40 gr)	0.1 (~50 gr)	Tr	0	Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
TM-013	0	0	Tr (~10 gr)	Tr	0	0	0	Tr	Tr	Tr	0	0	0	0	0
TM-014	0	Tr molybdenite (1 gr)	0.5 (~200 gr)	Tr	2 blue-green, pale blue	0	Tr (3 gr)	Tr	Tr	Tr	0	0	Tr	0	0
TM-015	0	0	0	0	5 pale blue, pale purple, green	Tr chondrodite (21 gr) Tr low-Cr diopside (2 gr)	Tr (2 gr)	Tr	Tr	Tr	0	0	Tr	0	0
TM-016	Tr (1 gr)	0	Tr (~20 gr)	0	0	Tr low-Cr diopside (2 gr)	Tr (1 gr)	Tr	Tr	Tr	0	0	0	0	0
TM-017	0	0	Tr (10 gr)	4	0	0	Tr (1 gr)	Tr	0	Tr	0	0	0	0	0
TM-018	0	0	0	Tr	3 green, blue-green gahnite; 8 pale blue, grey, blue-green spinel	Tr chondrodite (8 gr) Tr low-Cr diopside (2 gr)	Tr (14 gr)	Tr	0	Tr	0	0	Tr	0	0
TM-019	0	Tr arsenopyrite (1 gr) Tr fluorite (1 gr)	Tr (10 gr)	Tr	2 grey, grey-green	Tr chondrodite (21 gr) Tr Mn-epidote (4 gr) Tr low-Cr diopside (3 gr)	Tr (3 gr)	0	0	0	0	0	0	0	0
TM-020	0	0	0	Tr	1 blue-grey	0	Tr (1 gr)	0	0	Tr	0	0	Tr	0	0
TM-021	Tr (1 gr)	0	Tr (5 gr)	5	1 pale blue	0	Tr (9 gr)	0	0	0	0	0	0	0	0
TM-022	0	0	Tr (5 gr)	Tr	1 green gahnite; 10 pale blue, pale pink, green spinel	Tr Mn-epidote (1 gr)	Tr (32 gr)	Tr	Tr	Tr	0	0	Tr	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
TM-023	0	0	Tr (1 gr)	Tr	2 grey-pink, grey	Tr chondrodite (1 gr) Tr low-Cr diopside (11 gr)	Tr (2 gr)	1	Tr	Tr	0	0	Tr	0	0
TM-024	0	0	Tr (5 gr)	0.5	1 blue-green gahnite; 18 blue-green, pale blue-green, pale blue spinel	Tr chondrodite (1 gr) Tr low-Cr diopside (1 gr)	Tr (23 gr)	2	2	Tr	0	0	0	0	0
TM-025	Tr (1 gr)	Tr arsenopyrite (3 gr)	Tr (~30 gr)	Tr	8 pale purple, pink	Tr Mn-epidote (1 gr) Tr low-Cr diopside (1 gr)	Tr (7 gr)	Tr	0	0	Tr	0	Tr	0	0
TM-026	0	0	0	Tr	3 pale blue, grey	Tr low-Cr diopside (1 gr)	Tr (1 gr)	Tr	0	0	0	0	0	0	0
TM-027	Tr (2 gr)	0	0.2 (~200 gr)	Tr	2 green, pale blue-green	Tr low-Cr diopside (5 gr)	Tr (6 gr)	Tr	Tr	0	Tr	0	Tr	0	0
TM-028	0	0	Tr (3 gr)	Tr	0	0	Tr (2 gr)	0	Tr	Tr	0	0	Tr	0	0
TM-029	Tr (1 gr)	Tr barite (4 gr)	Tr (3 gr)	Tr	0	Tr low-Cr diopside (1 gr)	Tr (3 gr)	0	Tr	Tr	0	0	0	0	0
TM-030	0	80% barite (~6000 gr)	0	60	0	0	0	0	0	0	0	0	0	0	0
TM-031	0	0	15 (~5000 gr)	Tr	0	0	0.5 (~200 gr)	0	0	0	0	0	0	0	0
TM-032	Tr (1 gr)	0	1 (~250 gr)	Tr	1 pale blue	Tr chondrodite (1 gr)	0.5 (~80 gr)	0	0	0	0	0	0	0	0
TM-033	0	0	5 (~1500 gr)	Tr	1 pale purple	Tr ruby corundum (1 gr)	Tr (2 gr)	0	0	0	0	0	0	0	0
TM-034	**0**	**0**	**1 (~300 gr)**	**Tr**	**0**	**Tr ruby corundum (1 gr)** **Tr low-Cr diopside (2 gr)**	**Tr (24 gr)**	**Tr**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TM-035	0	0	1 (~500 gr)	Tr	1 blue-green	Tr low-Cr diopside (4 gr)	Tr (14 gr)	0	Tr	0	0	0	0	0	0
TM-036	0	0	2 (~1000 gr)	Tr	1 pale blue	Tr ruby corundum (1 gr)	Tr (36 gr)	0	0	0	0	0	0	0	0
TM-037	0	0	0.3 (~80 gr)	Tr	0	0	Tr (3 gr)	0	0	0	0	0	0	0	0
TM-038	0	0	0	Tr	0	0	0	0	0	0	0	0	0	0	0
TM-039	0	0	0	Tr	~350 pale blue, pale green, pink, purple, green	Tr ruby corundum (3 gr) Tr low-Cr diopside (8 gr)	Tr (~30 gr)	Tr	0	0	0	0	Tr	0	0
TM-040	0	Tr barite (~200 gr)	0	0	0	Tr low-Cr diopside (2 gr)	0	0	Tr	0	0	0	Tr	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
TM-041	0	0	0.3 (~600 gr)	Tr	~100 pale blue, pale blue-green, green, pink	Tr chondrodite (10 gr) Tr low-Cr diopside (7 gr)	Tr (~40 gr)	0	Tr	0	0	0	Tr	0	Tr bastnaesite(1 gr)
TM-042	0	Tr barite (7 gr)	0.1 (~200 gr)	Tr	~200 pale blue, pale blue-green, blue-green	Tr chondrodite (3 gr)	Tr (4 gr)	0	0	Tr	0	0	2	0	0
TM-043	Tr (1 gr)	0	Tr (2 gr)	Tr	5 blue-grey	Tr chondrodite (3 gr) Tr low-Cr diopside (6 gr)	Tr (10 gr)	Tr	Tr	Tr	0	0	Tr	0	0
TM-044	0	Tr barite (1 gr)	0.5	Tr	9 pale blue, grey, pale pink	Tr chondrodite (2 gr) Tr low-Cr diopside (2 gr)	Tr (3 gr)	0	0	Tr	0	0	Tr	0	0
TM-045	0	0	Tr (~15 gr)	Tr	2 pale blue, pale blue-green	0	Tr (6 gr)	Tr	0	Tr	0	0	15	0	0
TM-046	0	0	0	Tr	1 blue-green gahnite; 6 pale blue-green, pale purple, blue-green spinel	0	Tr (7 gr)	0	0	0	0	0	0	0	0
TM-047	0	0	95	0	0	0	0	4	0	0	0	0	0	0	0
TM-048	0	0	0	Tr	0	0	0	2	Tr	0	0	0	0	0	0
TM-049	0	0	0	Tr	0	0	Tr (1 gr)	Tr	0	0	0	0	0	0	0
TM-050	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0
TM-051	0	0	0	0	19 pale blue, pale purple, pale blue-green, green	Tr chondrodite (3 gr) Tr low-Cr diopside (1 gr)	Tr (14 gr)	2	2	0	0	0	0	0	0
TM-052	0	Tr barite (3 gr)	7 (~3000 gr)	Tr	1 blue-green gahnite	0	1 (~400 gr)	0	0	0	0	0	0	0	0
TM-053	0	0	70 (~2000)	5	0	0	0	0	0	0	0	0	0	0	0
TM-054	0	0	0	0	0	0	Tr (2 gr)	0	Tr	0.5	0	0	0	0	0
TM-055	0	0	0	0	2 pale blue, green	Tr chondrodite (2 gr) Tr Cr-grossular (1 gr)	Tr (2 gr)	Tr	0	Tr	0	0	0	0	0
TM-056	0	0	0	Tr	0	Tr low-Cr diopside (3 gr)	Tr (13 gr)	Tr	0	0	0	0	0	0	0
TM-057	0	0	0	0	2 pale blue, green	Tr chondrodite (1 gr)	Tr (7 gr)	0	0	0	0	0	Tr	0	0
TM-058	0	Tr barite (1 gr)	0.1 (~30 gr)	Tr	1 pale blue	0	Tr (3 gr)	Tr	0	1	0	0	0	0	0
TM-059	0	0	Tr (5 gr)	5	2 blue-green	0	Tr (2 gr)	Tr	0	Tr	0	0	0	0	0
TM-060	0	0	Tr (2 gr)	Tr	0	0	Tr (1 gr)	Tr	0	Tr	0	0	0	0	0
TM-061	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Sulphide/Arsenide + Related				Mg/Mn/Al/Cr Minerals										
	Minerals 0.25-0.5 mm				0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
TM-062	0	0	10 (~100 gr)	Tr	0	0	0	0	Tr	0	0	0	0	0	0
TM-063	0	0	0	0	3 pale blue, grey, blue-green	Tr Mn-epidote (1 gr) Tr low-Cr diopside (1 gr)	Tr (6 gr)	Tr	Tr	0	0	0	0	Tr (1 gr; see KIM data)	0
TM-064	Tr (1 gr)	0	2 (~1000 gr)	Tr	5 blue-green, pale blue-green	Tr chondrodite (2 gr)	Tr (10 gr)	0	0	0	0	0	0	0	0
TM-065	0	0	0	0	3 pale blue	Tr chondrodite (7 gr) Tr low-Cr diopside (2 gr)	Tr (10 gr)	0	0	0	0	0	0	0	0
TM-066	0	0	Tr (5 gr)	Tr	1 green gahnite; 3 pale blue, pale purple spinel	0	Tr (6 gr)	Tr	Tr	0	0	0	1	0	0
TM-067	Tr (2 gr)	0	0.1 (~150 gr)	Tr	~50 pale blue, pale blue-green	Tr chondrodite (~40 gr) Tr low-Cr diopside (1 gr)	Tr (2 gr)	0	0	Tr	0	0	0	0	0
TM-068	0	0	0	0	8 pale blue, pale purple, green	Tr chondrodite (2 gr)	Tr (1 gr)	0	0	Tr	0	0	Tr	0	0
TM-069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TM-070	0	0	0	0	7 pale purple, pale blue, grey, blue-green	Tr chondrodite (3 gr) Tr low-Cr diopside (3 gr)	Tr (3 gr)	0	0	0	0	0	0	0	0
TM-071	0	0	0	0	3 grey, pale blue, pale purple	Tr Mn-epidote (1 gr) Tr low-Cr diopside (1 gr)	Tr (7 gr)	Tr	0	0	0	0	Tr	0	0
TM-072	0	0	0	98	0	0	0	0	0	0	0	0	0	0	0
TM-073	0	0	0.1 (~50 gr)	Tr	4 blue-green	Tr chondrodite (15 gr)	Tr (11 gr)	0	0	0	0	0	0	0	0
TM-074	0	0	0.1 (~40 gr)	Tr	0	0	Tr (2 gr)	Tr	0	0	0	0	Tr	0	0
SG-001	0	3% barite (~800 gr)	Tr (10 gr)	0	3 blue-green, pale blue	Tr chondrodite (2 gr) Tr Mn-epidote (1 gr) Tr low-Cr diopside (2 gr)	Tr (12 gr)	0	0	Tr	0	0	0	0	0
SG-002	0	0	0	0	0	Tr chondrodite (1 gr)	Tr (1 gr)	Tr	Tr	0.5	0	0	0	0	0

Sample Number	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
SG-003	Tr (5 gr)	Tr barite (~25 gr)	0.1 (~100 gr)	Tr	5 blue, pale blue, pale purple, blue-green	Tr chondrodite (8 gr) Tr low-Cr diopside (2 gr)	Tr (~50 gr)	Tr	Tr	Tr	0	0	Tr	0	0
SG-004	Tr (4 gr)	Tr fluorite (16 gr)	Tr (~50 gr)	Tr	5 blue-grey, pale blue	Tr Mn-epidote (1 gr) Tr low-Cr diopside (6 gr)	Tr (2 gr)	Tr	Tr	Tr	0	0	0	0	0
SG-005	0	0	0	0	1 blue-green	Tr chondrodite (4 gr) Tr low-Cr diopside (1 gr)	Tr (5 gr)	Tr	Tr	Tr	0	0	0	0	0
SG-006	Tr (1 gr)	0	0.1 (~50 gr)	0	2 pale blue	Tr chondrodite (1 gr)	Tr (5 gr)	Tr	2	0.5	0	0	0	0	0
SG-007	**0**	**0**	**Tr (~100 gr)**	**Tr**	**4 green, grey**	**Tr chondrodite (1 gr) Tr low-Cr diopside (6 gr)**	**Tr (3 gr)**	**Tr**	**Tr**	**Tr**	**0**	**0**	**0**	**0**	**0**
SG-008	Tr (3 gr)	Tr barite (~40 gr) Tr fluorite (11 gr)	2 (~2000 gr)	Tr	15 pale blue, pale blue-green, blue, pale purple	Tr chondrodite (7 gr) Tr low-Cr diopside (5 gr)	Tr (~25 gr)	Tr	Tr	Tr	0	0	0	0	0
SG-009	0	0	0	0	2 pale blue	Tr low-Cr diopside (1 gr)	0	Tr	0	Tr	0	0	0	0	0
SG-010	**0**	**0**	**Tr (~50 gr)**	**0**	**5 blue-green, grey**	**Tr chondrodite (5 gr) Tr Mn-epidote (5 gr) Tr low-Cr diopside (4 gr)**	**Tr (2 gr)**	**Tr**	**0**	**Tr**	**0**	**0**	**0**	**0**	**0**
SG-011	0	0	0.1 (~150 gr)	Tr	4 pink Cr-spinel; ~50 pale blue, pale blue-green, pale purple, grey, blue-green spinel	Tr chondrodite (~20 gr) Tr low-Cr diopside (~60 gr)	Tr (~50 gr)	0	0	Tr	0	0	Tr	0	0
SG-012	0	0	0	0	9 pale blue, pale pink, pale green	Tr chondrodite (23 gr) Tr Mn-epidote (1 gr) Tr sapphire corundum (2 gr) Tr low-Cr diopside (4 gr)	Tr (5 gr)	Tr	Tr	Tr	0	0	Tr	0	0

	Sulphide/Arsenide + Related Minerals 0.25-0.5 mm				Mg/Mn/Al/Cr Minerals 0.25-0.5 mm										
	>1.0 amp			<1.0 amp	>1 amp					>0.8 amp	<0.8 amp				>1.0 amp
Sample Number	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% St	% Sps	% Fay	% Opx	% Cr	Prime Carbonatite Minerals
SG-013	Tr (2 gr)	0	0	0	32 pale blue, pale purple, blue-green	Tr chondrodite (5 gr) Tr low-Cr diopside (~40 gr)	Tr (6 gr)	0	0	Tr	0	0	Tr	0	0
SG-014	0	0	Tr (~15 gr)	0	3 pale blue	Tr chondrodite (12 gr) Tr low-Cr diopside (3 gr)	Tr (3 gr)	0	0	Tr	0	0	0	0	0
SG-015	Tr (1 gr)	0	0.2 (~400 gr)	Tr	~60 pale blue, pale blue-green, purple	Tr chondrodite (7 gr) Tr ruby corundum (1 gr) Tr low-Cr diopside (~80 gr)	Tr (~40 gr)	Tr	0	Tr	0	0	Tr	0	0

Appendix 9

Metamorphic/Magmatic Massive Sulphide Indicator Mineral Data Picking Remarks

Abbreviations:

gr	grain(s)
SEM	Scanning Electron Microscope

Shaded samples are ones identified as having heavy mineral/metal contamination.

Sample Number	MMSIM Picking Remarks
04JR-MA-001	Hematite/diopside-titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 1 arsenopyrite + quartz candidate = 1 arsenopyrite + quartz; 11 white to pink, earthy barite candidates = 1 barite, 2 arsenolite (As_2O_3; probable contamination), 1 pharmacolite ($CaHAsO_4.2M_2O$; probable contamination), 2 apatite, 1 siderite, 2 epidote, 1 diopside and 1 andradite; 2 blue to blue-green gahnite versus spinel candidates = 2 spinel; and 1 colourless spinel versus glass candidate = 1 glass (contamination). SEM checks from 0.25-0.5 mm fraction: 16 brown-grey and orange sphalerite versus titanite candidates = 6 titanite, 8 anatase and 2 grossular; 12 representative white to pink, earthy barite candidates = 8 barite, 2 arsenolite (probable contamination), 1 pharmacolite (probable contamination) and 1 apatite; 5 blue to blue-green gahnite versus spinel candidates = 5 spinel; and 3 representative Cr-garnet candidates = 3 zaratite ($Ni_3(CO_3)(OH)_4.4H_2O$; probable contamination).
04JR-MA-002	Hematite-ilmenite-hornblende/grossular- epidote-apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 loellingite versus arsenopyrite candidate = 1 arsenopyrite; 1 dark green gahnite versus clinopyroxene candidate = 1 hedenbergite; 5 earthy white barite candidates = 5 barite; and 5 brown titanite versus grossular (major nonparamagnetic assemblage mineral) candidates = 5 grossular .
04JR-MA-003	Hornblende-hematite/diopside-epidote- titanite assemblage. SEM checks from 1.0-2.0 mm fraction: 2 barite versus apatite candidates = 2 barite. SEM checks from 0.5-1.0 mm fraction: 3 barite candidates = 3 barite. 0.5-1.0 mm fraction contains 0.5% (~30 grains) barite.
04JR-MA-004	Hematite-hornblende/diopside-epidote assemblage. SEM checks from 0.25-0.5 mm fraction: 1 purple spinel versus ruby corundum candidate = 1 spinel.
04JR-MA-005	Hematite/diopside-epidote assemblage. SEM checks from 0.5-1.0 mm fraction: 5 white and pink barite ± rare earth mineral candidates = 5 barite.
04JR-MA-006	Hematite-almandine-hornblende/diopside assemblage.
04JR-MA-007	Hematite/zircon-diopside-rutile assemblage. SEM checks from 0.5-1.0 mm fraction: 5 barite ± rare earth mineral candidates = 5 barite. SEM checks from 0.25-0.5 mm fraction: 3 chondrodite candidates = 2 chondrodite and 1 barite; 5 white barite versus apatite candiates = 4 barite and 1 apatite; 10 brown and pink zircon (major nonparamagnetic assemblage mineral) versus grossular candidates = 10 zircon; and 10 earthy brown rutile (major nonparamagnetic assemblage mineral) candidates = 10 rutile.
04JR-MA-008	Hematite-hornblende/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 1 red barite versus synchysite candidate = 1 barite; 1 green gahnite versus diopside candidate = 1 gahnite; and 1 Pb-metal candidate = 1 PbSn-solder (contamination). SEM checks from 0.25-0.5 mm fraction: 5 representative orange spessartine candidates = 5 almandine with trace Mn. 0.5-1.0 mm fraction contains 2% (~80 grains) barite.
04JR-MA-009	Hornblende-almandine-hematite/diopside- epidote assemblage. SEM checks from 0.5-1.0 mm fraction: 5 anthophyllite versus gedrite candidates = 5 amphibole-altered augite.
04JR-MA-010	Hematite-hornblende/diopside-apatite- titanite assemblage.
04JR-MA-011	Hornblende-hematite-almandine/diopside- titanite assemblage.

Sample Number	MMSIM Picking Remarks
04JR-MA-012	Almandine-hornblende-ilmenite/titanite- diopside-zircon assemblage. SEM checks from 1.0-2.0 mm fraction: 2 Pb-metal candidates = 2 PbSn-solder (contamination); and 1 white secondary Pb candidate = 1 cerussite (contamination). SEM check from 0.5-1.0 mm fraction: 1 brown secondary Pb candidate = 1 cerussite (contamination). SEM checks from 0.25-0.5 mm fraction: 5 pale brown spessartine versus almandine candidates = 5 andradite. Paramagnetic (<0.8 amp) 0.25-0.5 mm fraction contains 10% andradite.
04JR-MA-013	Hornblende-hematite/diopside-titanite assemblage. SEM checks from 1.0-2.0 mm fraction: 20 epidote candidates with assorted colour coatings including red, orange, buff, green, blue, purple and white = 20 epidote + Ti (paint contamination). SEM checks from 0.25-0.5 mm fraction: 5 barite candidates = 1 barite and 4 apatite; 2 green gahnite candidates = 1 gahnite and 1 spinel, and 5 spessartine versus almandine candidates = 5 almandine. Paint contamination is biased to coarsest mineral grains, especially epidote; 1.0-2.0, 0.5-1.0 and 0.25-0.5 mm fractions respectively contain 40% (~100 grains), 2% (~200 grains) and trace (~200 grains) of paint-coated epidote.
04JR-MA-014	Hornblende/diopside assemblage.
04JR-MA-015	Hornblende-hematite-almandine/diopside- epidote-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 hercynite.
04JR-MA-016	Hornblende-almandine/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 2 orange celestite versus barite candidates = 2 barite. SEM checks from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 Zn-spinel. 1.0-2.0 mm and 0.5-1.0 mm fractions contain 20% (~80 grains) and 10% (~800 grains) barite, respectively.
04JR-MA-017	Hornblende-almandine-ilmenite/diopside- titanite assemblage.
04JR-MA-018	Hornblende/diopside assemblage. SEM check from 0.5-1.0 mm fraction: 1 pale blue spinel versus sapphire corundum candidate = 1 spinel. SEM check from 0.25-0.5 mm fraction: 1 pale purple spinel versus sapphire corundum candidate = 1 spinel.
04JR-MA-019	Hornblende-hematite-almandine/diopside- titanite assemblage. SEM check from 0.5-1.0 mm fraction: 1 red Mn-epidote candidate = 1 Mn-epidote. SEM check from 0.25-0.5 mm faction: 1 pink ruby corundum versus Mn-epidote candidate = 1 Mn-epidote.
04JR-MA-020	Hornblende/diopside-epidote-titanite assemblage. SEM check from 0.5-1.0 mm fraction: 1 Mn-epidote candidate = 1 Mn-epidote. SEM checks from 0.25-0.5 mm fraction: 7 blue-green gahnite versus spinel candidates = 7 spinel (trace Zn).
04JR-MA-021	Hornblende-almandine/diopside assemblage. 0.5-1.0 mm fraction contains 1% (~40 grains) barite.
04JR-MA-022	Hornblende-almandine/diopside-epidote- titanite assemblage. Paramagnetic (<0.8 amp) 0.25-0.5 mm fraction contains 0.1% (~80 grains) slag (contamination).
04JR-MA-023	Hornblende-hematite/diopside-epidote- titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-MA-024	Hornblende-almandine-ilmenite/diopside- titanite assemblage. 0.5-1.0 mm fraction contains 4% (~200 grains) barite.
04JR-MA-025	Hornblende/diopside-epidote assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel.
04JR-MA-026	Hornblende-almandine/diopside-titanite assemblage.

Sample Number	MMSIM Picking Remarks
04JR-MA-027	Hornblende-hematite/epidote-diopside assemblage.
04JR-MA-028	Hornblende-hematite-almandine/diopside- titanite assemblage.
04JR-MA-029	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 11 blue-green gahnite versus spinel candidates = 7 gahnite and 4 spinel; and 1 Mn-epidote versus monazite candidate = 1 monazite.
04JR-MA-030	Hornblende-ilmenite/rutile-diopside- epidote assemblage. SEM checks from 0.25-0.5 mm fraction: 5 representative ochre rutile and 5 representative brown rutile (major nonparamagnetic assemblage mineral) candidates = 9 rutile and 1 titanite.
04JR-MA-031	Hematite-almandine/diopside-apatite assemblage.
04JR-MA-032	Hornblende-almandine/diopside-titanite- epidote assemblage.
04JR-MA-033	Hornblende/diopside-epidote-apatite assemblage.
04JR-MA-034	Hornblende-almandine-ilmenite/diopside- titanite assemblage.
04JR-MA-035	Undersized concentrate; therefore not electromagnetically separated and mineral assemblage not listed. Main mineral is hornblende.
JR-MA-035/038	Hornblende-almandine/diopside-epidote assemblage.
04JR-MA-036	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-037	Hornblende-almandine/diopside-epidote- apatite assemblage.
04JR-MA-038	Hornblende/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-039	Hornblende-almandine/diopside assemblage.
04JR-MA-040	Hornblende-almandine-goethite/diopside- epidote-titanite assemblage.
04JR-MA-041	Hornblende-almandine/diopside-apatite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 gahnite.
04JR-MA-042	Hornblende-almandine-ilmenite/diopside- epidote-titanite assemblage. Chalcopyrite grains tend to be fractured and leached suggesting contamination.
04JR-MA-043	Hornblende/diopside-epidote assemblage.
04JR-MA-044	Hornblende-almandine-ilmenite/diopside assemblage. SEM check from 1.0-2.0 mm fraction: 1 barite candidate = 1 barite. SEM check from 0.5-1.0 mm fraction: 1 barite versus apatite candidate = 1 barite. SEM checks from 0.25-0.5 mm fraction: 3 blue-green and blue gahnite versus spinel candidates = 3 spinel.
04JR-MA-045	Hematite-hornblende/diopside assemblage. SEM check from 0.5-1.0 mm fraction: 1 barite versus apatite candidate = 1 barite.
04JR-MA-046	Hornblende-ilmenite-almandine/epidote- diopside-titanite assemblage.
04JR-MA-047	Almandine-hornblende/diopside-titanite assemblage.
04JR-MA-048	Hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 5 spinel.
04JR-MA-049	Hornblende-almandine/diopside-epidote assemblage.
04JR-MA-050	Hornblende-almandine-ilmenite/diopside- titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 3 PbSn-solder candidates = 3 Pb-metal (contamination). Chalcopyrite and pyrite tend to be angular fractured and leached grains suggesting contamination.
04JR-MA-051	Hornblende-almandine/diopside-epidote assemblage.
04JR-MA-052	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 4 blue-green gahnite versus spinel candidates = 4 spinel.
04JR-MA-053	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 1 gahnite and 1 spinel.
04JR-MA-054	Almandine-hornblende/diopside-epidote assemblage.

Sample Number	MMSIM Picking Remarks
04JR-MA-055	Hornblende-almandine/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 4 PbSn-solder versus Pb-metal candidates = 4 PbSn-solder (contamination); 1 of 3 unnatural looking black-green precipitate = 1 Fe-oxalate (contamination); and 2 slag candidates = 2 SiTiMn-slag (contamination). SEM checks from 0.25-0.5 mm fraction: 1 botryoidal chalcopyrite candidate = 1 chalcopyrite (possible contamination); 2 PbSn-solder versus cerussite candidates = 1 PbSn-solder and 1 cerussite (both contamination); 1 of 23 black-green precipitate = 1 Fe-oxalate (contamination); and 2 spherical slag candidates = 2 slag (contamination).
04JR-MA-056	Hornblende-almandine/diopside assemblage. SEM check from 0.5-1.0 mm fraction: 1 dark green gahnite versus diopside candidates = 1 diopside.
04JR-MA-057	Undersized concentrate; therefore not electromagnetically separated and mineral assemblage not listed. Main minerals are hornblende, diopside, almandine and pale green epidote. SEM check from 1.0-2.0 mm fraction: 1 Pb-metal versus solder candidate = 1 Zn-metal (contamination).
04JR-MA-058	Augite-ilmenite/diopside-titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 3 Pb-metal versus PbSn-solder candidates = 1 Pb-metal, 1PbSn-solder and 1 Sn-metal (all contamination); and 2 beige cerussite candidates = 2 cerussite (contamination).
04JR-MA-059	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 loellingite versus arsenopyrite candidate = 1 arsenopyrite.
04JR-MA-060	Almandine-hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel.
04JR-MA-061	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-062	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-063	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-064	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-065	Hornblende/diopside assemblage.
04JR-MA-066	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-MA-067	Hornblende/diopside-titanite assemblage.
04JR-MA-068	Hornblende-almandine-ilmenite/diopside- apatite-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 8 blue-green gahnite versus spinel candidates = 8 spinel.
04JR-MA-069	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-070	Almandine-hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 1 gahnite and 1 spinel.
04JR-MA-071	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 7 blue-green gahnite versus spinel candidates = 7 spinel.
04JR-MA-072	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-073	Hornblende-almandine/diopside assemblage.
04JR-MA-074	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-075	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-076	Hornblende/diopside-titanite assemblage.

Sample Number	MMSIM Picking Remarks
04JR-MA-077	Almandine-hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 22 blue-green gahnite versus spinel candidates = 17 gahnite, 4 spinel and 1 hercynite.
04JR-MA-078	Almandine-hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 Pb-metal versus cerussite candidate = 1 Pb-metal (contamination).
04JR-MA-079	Hornblende/diopside-apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 representative anthophyllite candidates = 5 tremolite.
04JR-MA-080	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-081	Hornblende/diopside-titanite assemblage.
04JR-MA-082	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 gahnite.
04JR-MA-083	Hornblende-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-MA-084	Hornblende/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-085	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 gahnite.
04JR-MA-086	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-087	Hornblende-almandine/diopside-apatite assemblage.
04JR-MA-088	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 12 blue-green gahnite versus spinel candidates = 4 gahnite and 8 spinel; and 5 representative orange spessartine versus almandine candidates = 5 almandine.
04JR-MA-089	Hornblende-almandine/diopside assemblage. Paramagnetic (<0.8 amp) 0.25-0.5 mm fraction contains 0.5% (~200 grains) slag (contamination). SEM check from 1.0-2.0 mm fraction: 1 Pb-metal versus PsSn-solder candidate = 1 Pb-metal (contamination). SEM check from 0.5-1.0 mm fraction: 1 Pb-metal versus PbSn-solder candidate = 1 Pb-metal (contamination).
04JR-MA-090	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 2 barite candidates = 2 barite; and 1 blue-green gahnite versus spinel candidate = 1 spinel (Zn-bearing). SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-091	Hornblende/diopside-epidote assemblage. SEM checks from 1.0-2.0 mm fraction: 2 PbSn-solder versus Pb-metal candidates = 1 PbSn-solder and 1 Pb-metal (contamination). SEM checks from 0.5-1.0 mm fraction: 2 PbSn-solder versus Pb-metal candidats = 2 Pb-metal (contamination). SEM check from 0.25-0.5 mm fraction: 1 PbS-solder versus Pb-metal candidate = 1 Pb-metal (contamination).
04JR-MA-092	Hornblende-almandine-hematite/diopside- titanite assemblage.
04JR-MA-093	Hornblende/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-094	Hornblende-almandine/diopside-epidote assemblage. SEM checks from 0.5-1.0 mm fraction: 2 Fe-oxalate candidates = 2 Fe-oxalate (rust-removal byproduct; contamination).
04JR-MA-095	Almandine-hornblende/diopside assemblage.
04JR-MA-096	Hornblende/epidote-titanite-diopside assemblage.
04JR-MA-097	Almandine-hornblende/titanite-diopside- apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 pink barite versus apatite candidates = 5 apatite.

Sample Number	MMSIM Picking Remarks
04JR-MA-098	Hornblende-hematite/diopside-apatite- titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 3 barite candidates = 3 diopside; 1 chondrodite candidate = 1 chondrodite; and 1 orthopyroxene versus augite candidate = 1 bronzite.
04JR-MA-099	Almandine-hornblende/diopside-titanite- apatite-pyrite assemblage. SEM checks from 1.0-2.0 mm fraction: 4 Fe-oxalate candidates = 4 Fe-oxalate (contamination). SEM checks from 0.25-0.5 mm fraction: 1 arsenopyrite versus loellingite candidate = 1 arsenopyrite; and 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-MA-100	Hornblende-almandine-hematite/epidote- apatite-diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 5 fibrous barite candidates = 5 barite; 1 deep pink spinel versus ruby corundum candidate = 1 spinel; and 2 blue-green gahnite versus spinel candidates = 2 spinel. 0.5-1.0 mm fraction contains 4% (~40 grains) barite.
04JR-MA-101	Hornblende-ilmenite/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 4 blue-green gahnite versus spinel candidates = 4 spinel (2 are Zn-bearing); and 1 PbSn-solder versus Pb-metal candidate = 1 PbSn-solder (contamination). SEM checks from 0.25-0.5 mm fraction: 12 representative blue-green gahnite versus spinel candidates = 12 spinel; 9 pink ruby corundum versus spinel candidates = 9 Cr-spinel; and 1 blue sapphire corundum candidate = 1 gahnite. 0.5-1.0 mm fraction contains 0.1% (~40 grains) spinel.
04JR-MA-102	Hornblende/diopside assemblage.
04JR-MA-103	Hornblende-almandine/diopside-apatite assemblage.
04JR-MA-104	Hornblende-ilmenite-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates - 2 spinel (both are Zn-bearing).
04JR-MA-105	Hornblende/diopside assemblage.
04JR-MA-106	Hornblende-almandine/diopside assemblage.
04JR-MA-107	Almandine-hornblende/diopside-titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 1 galena candidate = 1 galena; 1 corundum candidate = 1 corundum; and 1 Pb-metal versus PbSn-solder candidate = 1 Sn-metal (contamination). SEM checks from 0.25-0.5 mm fraction: 2 sphalerite candidates = 2 cleiophane sphalerite; and 4 blue-green gahnite versus spinel candidates = 4 spinel.
04JR-MA-108	Hornblende/diopside assemblage.
04JR-MA-109	Hornblende-almandine/diopside-apatite- titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 4 glassy topaz versus zoisite candidates = 4 diopside. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus augite candidates = 1 gahnite and 1 hedenbergite.
04JR-MA-110	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-111	Ilmenite-hornblende-almandine/zircon- epidote-diopside-apatite assemblage. SEM check from 0.5-1.0 mm fraction: 1 green gahnite versus spinel candidate = 1 gahnite. SEM checks from 0.25-0.5 mm fraction: 3 blue-green gahnite versus spinel candidates = 1 gahnite and 2 spinel; and 1 pink Cr-spinel versus ruby corundum candidate = 1 ruby corundum.
04JR-MA-112	Hornblende/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 2 blue-green blue gahnite versus spinel candidates = 2 spinel. SEM checks from 0.25-0.5 mm fraction: 9 blue-green gahnite versus spinel candidates = 9 spinel.

Sample Number	MMSIM Picking Remarks
04JR-MA-113	Hornblende-hematite/grossular-epidote- diopside assemblage. SEM checks from 1.0-2.0 mm fraction: 4 Mn-oxide candidates = 4 romanechite. SEM checks from 0.5-1.0 mm fraction: 5 staurolite versus grossular (major nonparamagnetic assemblage mineral) candidates = 5 grossular. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 gahnite. 0.25-0.5 mm fraction contains 0.2% (~400 gr) tourmaline.
04JR-MA-114	Hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 3 pale orange corundum versus almandine candidates = 2 corundum and 1 almandine1 pink ruby corundum versus Mn-epidote candidate = 1 ruby corundum; and 4 blue sapphire corundum versus anatase candidates = 1 sapphire corundum and 3 glass (contamination). 0.25-0.5 mm fraction contains 0.05% (~100 grains) slag (contamination).
04JR-MA-115	Hornblende-almandine/diopside-apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 10 representative blue-green gahnite versus spinel candidates = 10 spinel; and 1 pink Cr-spinel versus ruby corundum candidate = 1 spinel (Zn-bearing).
04JR-MA-116	Hornblende/diopside-titanite assemblage.
04JR-MA-117	Hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 17 dark green to blue-green gahnite versus spinel candidates = 14 spinel (4 are Zn-bearing), 1 diopside and 2 hornblende; 1 red spinel versus red rutile candidate = 1 Cr-free (non-kimberlitic) pyrope + chlorite; and 5 representative pink-red spinel versus almandine candidates = 5 Ti-augite.
04JR-MA-118	Hornblende-almandine/diopside-epidote- titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-119	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-120	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-121	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 10 blue-green to pale blue-green gahnite versus spinel candidates = 10 spinel.
04JR-MA-122	Hornblende-ilmenite/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-123	Almandine-hornblende-ilmenite/diopside assemblage. SEM checks from 1.0-2.0 mm fraction: 1 green gahnite versus spinel candidate = 1 gahnite; and 3 opaque grey spinel versus corundum candidates = 3 spinel (all are Zn-bearing). SEM checks from 0.5-1.0 mm fraction: 1 sphalerite versus monazite candidate = 1 sphalerite; 2 blue-green gahnite versus spinel candidates = 2 spinel; and 3 pink spinel versus almandine candidates = 1 Cr-spinel and 2 almandine. SEM checks from 0.25-0.5 mm fraction: 10 blue-green gahnite versus spinel candidates = 1 gahnite; and 9 spinel (6 are Zn-bearing); and 11 pink spinel versus ruby corundum candidates = 11 Cr-spinel. 0.5-1.0 mm fraction contains 0.1% (~20 gr) Cr-spinel and 1% (~200 gr) spinel.
04JR-MA-124	Hornblende/diopside assemblage. SEM check from 0.5-1.0 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-MA-125	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 4 blue-green to green gahnite versus spinel candidates = 4 spinel.
04JR-MA-126	Hornblende/diopside-titanite assemblage.
04JR-MA-127	Hornblende-almandine-ilmenite/apatite- titanite-diopside assemblage.
04JR-MA-128	Hornblende/diopside assemblage.
04JR-MA-129	Hornblende/diopside-titanite assemblage.

Sample Number	MMSIM Picking Remarks
04JR-MA-130	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 1 gahnite and 4 spinel; and 1 chondrodite candidate = 1 chondrodite.
04JR-MA-131	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus clinopyroxene candidate = 1 augite.
04JR-MA-132	Almandine-ilmenite/epidote-titanite assemblage.
04JR-MA-133	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-134	Hornblende/diopside-epidote-titanite assemblage.
04JR-MA-135	Hornblende/diopside assemblage.
04JR-MA-136	Hornblende/diopside-titanite assemblage. SEM checks from 0.5-1 0 mm fraction: 4 spessartine versus almandine candidates = 4 almandine.
04JR-MA-137	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 spherical grey Fe-oxalate candidate = 1 Fe-oxalate (contamination).
04JR-MA-138	Hornblende/diopside assemblage. SEM check from 0.5-1.0 mm fraction: 1 barite candidate = 1 barite + calcite.
04JR-MA-139	Hornblende/diopside assemblage.
04JR-MA-140	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 arsenopyrite versus loellingite candidates = 2 arsenopyrite.
04JR-MA-141	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 4 green gahnite versus spinel candidates = 4 spinel.
04JR-MA-142	Hornblende/diopside-titanite assemblage.
04JR-MA-143	Hornblende-almandine/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 corundum versus epidote candidate = 1 andradite.
04JR-MA-144	Hornblende/diopside assemblage.
04JR-MA-145	Almandine-hornblende/diopside-titanite assemblage.
04JR-MA-146	Hornblende/diopside-epidote-apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 molybdenite versus metal contamination candidate = 1 acanthite (AgS2; possible contamination); and 1 arsenopyrite versus pyrite candidate = 1 pyrite.
04JR-MA-147	Hornblende-almandine/diopside-titanite assemblage. SEM checks from 1.0-2.0 mm fraction: 1 Pb-metal candidate = 1 Pb-metal (contamination); and 1 PbSn-solder candidate = 1 Zn-metal (contamination). SEM checks from 0.5-1.0 mm fraction: 1 PbSn-solder candidate = 1 acanthite (AgS2, possible contamination); and 1 colourless corundum candidate = 1 corundum. SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 1 gahnite and 4 spinel.
04JR-MA-148	Hornblende-almandine/diopside-titanite- apatite assemblage. SEM check from 1.0-2.0 mm fraction: 1 Pb-metal versus Zn-metal candidate = 1 Zn-metal (contamination). SEM checks from 0.5-1.0 mm fraction: 2 Pb-metal versus candidates = 1 Pb-metal and 1 CrNi-steel (contamination).
04JR-MA-149	Hornblende/diopside-apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidates = 1 spinel; and 1 blue gahnite versus spinel candidate = 1 glass (contamination).
04JR-MA-150	Almandine-hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 15 green gahnite versus spinel candidates = 15 gahnite; 5 blue-green gahnite versus spinel candidates = 2 gahnite and 3 spinel; and 5 pale blue-green to pale blue gahnite versus spinel candidates = 1 pale blue-green gahnite and 4 spinel.

Sample Number	MMSIM Picking Remarks
04JR-MA-151	Hematite-almandine-hornblende/zircon- titanite-diopside assemblage. SEM checks from 1.0-2.0 mm fraction: 2 Pb-metal versus Zn-metal candidates = 2 Pb-metal (contamination). SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel (Zn-bearing).
04JR-MA-152	Hornblende/diopside assemblage.
04JR-MA-153	Hornblende/titanite assemblage.
04JR-MA-154	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-155	Hornblende-almandine/diopside-titanite- apatite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 sphalerite versus andradite candidate = 1 titanite; and 1 hercynite versus crustal ilmenite candidate = 1 crustal ilmenite.
04JR-MA-156	Hornblende-almandine-ilmenite/diopside- zircon-titanite assemblage.
04JR-MA-157	Hornblende-almandine-ilmenite/diopside- titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 green gahnite versus spinel candidates = 2 spinel.
04JR-MA-158	Hornblende-almandine/diopside-titanite assemblage.
04JR-MA-159	Almandine-hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 loellingite versus arsenopyrite candidate = 1 arsenopyrite; 2 green gahnite versus spinel candidates = 2 spinel; and 3 spessartine versus almandine candidates = 1 spessartine, 1 almandine and 1 grossular.
04JR-MA-160	Hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 green gahnite versus spinel candidates = 2 spinel; 1 blue gahnite versus spinel candidate = 1 spinel; and 1 pale blue spinel versus sapphire corundum candidate = 1 sapphire corundum.
04JR-MA-161	Hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-TM-001	Hornblende-almandine-hematite/diopside- apatite assemblage.
04JR-TM-002	Hornblende-hematite/diopside-apatite- titanite assemblage.
04JR-TM-003	Hornblende-hematite/diopside-titanite assemblage. SEM check from 0.5-1.0 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-TM-004	Hematite-hornblende/zircon-diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 5 zircon (major nonparamagnetic assemblage mineral) candidates = 5 zircon.
04JR-TM-005	Hematite-hornblende/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel; and 1 pink ruby corundum versus spinel candidate = 1 ruby corundum.
04JR-TM-006	Hornblende-hematite/diopside assemblage.
04JR-TM-007	Hornblende-almandine/diopside-epidote assemblage.
04JR-TM-008	Hornblende-hematite/diopside-titanite assemblage.
04JR-TM-009	Hornblende-almandine/epidote-diopside assemblage.
04JR-TM-010	Hematite-goethite/diopside-epidote assemblage.
04JR-TM-011	Hematite-hornblende/diopside-titanite assemblage.
04JR-TM-012	Hornblende-hematite/diopside-zircon assemblage.
04JR-TM-013	Hornblende-hematite/diopside-epidote- titanite assemblage.
04JR-TM-014	Hornblende/diopside-epidote-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 3 barite versus apatite candidates = 3 apatite; and 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-TM-015	Hornblende/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel.
04JR-TM-016	Hornblende-almandine/diopside assemblage.
04JR-TM-017	Hornblende-almandine/diopside-titanite assemblage.

Sample Number	MMSIM Picking Remarks
04JR-TM-018	Hornblende-almandine-hematite/diopside- titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 4 green to blue-green gahnite versus spinel candidates = 3 green to blue-green gahnite and 1 blue-green spinel.
04JR-TM-019	Hornblende/diopside-titanite assemblage.
04JR-TM-020	Hornblende-ilmenite-almandine/epidote- titanite-diopside assemblage.
04JR-TM-021	Hematite/diopside assemblage.
04JR-TM-022	Almandine-hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 4 green gahnite versus spinel candidates = 1 gahnite and 3 spinel; and 5 representative spessartine versus almandine candidates = 5 almandine. Also picked 1 reshaped 100 x 450 x 1000μ gold grain from 0.25-0.5 mm fraction.
04JR-TM-023	Hornblende-almandine/diopside assemblage.
04JR-TM-024	Hornblende-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 1 gahnite and 4 spinel (1 is Zn-bearing).
04JR-TM-025	Hornblende-almandine/epidote assemblage.
04JR-TM-026	Hornblende-almandine/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 green spinel versus diopside candidate = 1 diopside.
04JR-TM-027	Hornblende-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 1 green and 1 pale blue-green gahnite versus spinel candidates = 2 spinel.
04JR-TM-028	Hornblende/diopside assemblage.
04JR-TM-029	Almandine-hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 6 barite versus diopside candidates = 4 barite and 2 diopside.
04JR-TM-030	Goethite-almandine-hornblende/barite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 grey barite versus apatite candidates = 5 composite barite + calcite. 0.5-1.0 mm fraction contains ~500 grains (60%) barite,
04JR-TM-031	Hornblende-almandine-ilmenite/epidote- diopside-pyrite-titanite assemblage.
04JR-TM-032	Hornblende-almandine/diopside-apatite assemblage.
04JR-TM-033	Hornblende/diopside-titanite assemblage.
04JR-TM-034	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 galena versus Pb-metal candidate = 1 Pb-metal (contamination).
04JR-TM-035	Hornblende-almandine/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-TM-036	Hornblende-almandine-hematite/diopside- titanite assemblage.
04JR-TM-037	Hornblende-hematite/diopside-epidote assemblage.
04JR-TM-038	Hematite-almandine-hornblende/diopside- epidote assemblage. SEM checks from 0.5-1.0 mm fraction: 3 pink barite versus celestite candidates = 3 barite.
04JR-TM-039	Almandine-hornblende/diopside-titanite assemblage. SEM checks from 0.5-1.0 mm fraction: 2 green gahnite versus spinel candidates = 2 spinel. SEM checks from 0.25-0.5 mm fraction: 5 green gahnite versus spinel candidates = 5 spinel.
04JR-TM-040	Hornblende-almandine-hematite/diopside- titanite assemblage. 0.5-1.0 mm fraction contains ~80 grains (2%) barite.
04JR-TM-041	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 4 green and 1 pale blue-green gahnite versus spinel candidates = 5 spinel; and 1 monazite versus bastnaesite candidate = 1 bastnaesite (Ce,La)F(CO3).
04JR-TM-042	Hornblende-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 10 blue-green gahnite versus spinel candidates = 10 spinel.
04JR-TM-043	Hornblende/diopside assemblage.
04JR-TM-044	Hornblende-almandine/diopside-epidote assemblage.
04JR-TM-045	Hornblende-orthopyroxene/diopside assemblage.

Sample Number	MMSIM Picking Remarks
04JR-TM-046	Hornblende/diopside assemblage. 0.25-0.5 mm fraction: 3 blue-green gahnite versus spinel candidates = 1 gahnite and 2 spinel (both are Zn-bearing); and 1 Mn-epidote versus monazite candidate = 1 red rutile.
04JR-TM-047	Pyrite assemblage. "Pyrite" dominates all fractions and occurs with kyanite in lithic fragments.
04JR-TM-048	Undersized concentrate; therefore not electromagnetically separated and mineral assemblage not listed. Main mineral is hornblende.
04JR-TM-049	Hornblende-hematite/diopside assemblage.
04JR-TM-050	Undersized concentrate; therefore not electromagnetically separated and mineral assemblage not listed. Main mineral is hornblende.
04JR-TM-051	Hornblende/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 dark green gahnite versus spinel candidate = 1 spinel.
04JR-TM-052	Hornblende-almandine/epidote-diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 3 barite candidates = 3 barite; and 1 blue-green gahnite versus spinel candidate = 1 gahnite.
04JR-TM-053	Undersized concentrate; therefore not electromagnetically separated and mineral assemblage not listed. Main minerals are pyrite and almandine.
04JR-TM-054	Almandine/epidote-titanite assemblage.
04JR-TM-055	Hornblende-almandine-ilmenite/epidote- titanite-diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel.
04JR-TM-056	Hornblende-almandine/diopside assemblage.
04JR-TM-057	Hornblende/epidote-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel, lost in transfer to vial.
04JR-TM-058	Almandine-hematite-hornblende/epidote- diopside assemblage.
04JR-TM-059	Hornblende-hematite-almandine/diopside- epidote-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-TM-060	Hornblende-almandine/diopside-epidote assemblage.
04JR-TM-061	Augite/epidote assemblage. SEM checks from 0.5-1.0 mm fraction: 2 representative augite (major paramagnetic assemblage mineral) candidates = 2 augite. SEM checks from 0.25-0.5 mm fraction: 5 representative epidote (major nonparamagnetic assemblage mineral) versus orthopyroxene candidates = 3 epidote, 1 diopside and 1 titanite.
04JR-TM-062	Almandine-hematite-hornblende/diopside- titanite assemblage.
04JR-TM-063	Hornblende-hematite-almandine/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-TM-064	Hornblende-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-TM-065	Hornblende-almandine/diopside assemblage.
04JR-TM-066	Hornblende-almandine/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 gahnite.

Sample Number	MMSIM Picking Remarks
04JR-TM-067	Hornblende/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 5 pale blue-green gahnite versus spinel candidates = 5 spinel; and 1 colourless spinel versus corundum candidate = 1 spinel. SEM checks from 0.25-0.5 mm fraction: 1 blue-green and 1 blue-grey gahnite versus spinel candidates = 2 spinel; and 1 pale pink ruby corundum versus almandine candidate = 1 almandine. 0.5-1.0 mm fraction contains 0.5% (~60 gr) slag (contamination) and 1% (~150 gr) Fe-coated slag (contamination). Paramagnetic (<0.8 amp) 0.25-0.5 mm fraction contains 0.1% (~1000 gr) slag (contamination) and a similar proportion of Fe-coated slag (contamination). Chalcopyrite and pyrite tend to be angular, fractured and leached grains suggesting contamination from mine waste.
04JR-TM-068	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel.
04JR-TM-069	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 5 purple-brown orthopyroxene versus axinite candidates = 5 diopside (major nonparamagnetic assemblage mineral). Diopside dominates all fractions.
04JR-TM-070	Hornblende-ilmenite/diopside-titanite assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 1 Zn-spinel and 1 spinel.
04JR-TM-071	Hornblende/diopside-epidote assemblage.
04JR-TM-072	Goethite/diopside assemblage. Goethite dominates all fractions.
04JR-TM-073	Hornblende/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 4 blue-green gahnite versus spinel candidates = 4 spinel.
04JR-TM-074	Hornblende-almandine/diopside-epidote assemblage.
04JR-SG-001	Hematite-hornblende/diopside-titanite assemblage. SEM check from 1.0-2.0 mm fraction: 1 barite versus REE-mineral candidate = 1 barite. SEM checks from 0.25-0.5 mm fraction: 7 barite versus REE-mineral candidates = 7 barite; and 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-SG-002	Hornblende/diopside assemblage.
04JR-SG-003	Hornblende/diopside-titanite assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-SG-004	Hornblende/diopside-titanite assemblage.
04JR-SG-005	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-SG-006	Hornblende/epidote-diopside assemblage.
04JR-SG-007	Hornblende-almandine/diopside-epidote assemblage. SEM check from 0.5-1.0 mm fraction: 1 grey metal turning = 1 Ni-metal (contamination). SEM checks from 0.25-0.5 mm fraction: 2 green gahnite versus spinel candidates = 2 spinel. Pyrite is mantled by goethite.
04JR-SG-008	Hornblende-almandine/diopside-titanite assemblage.
04JR-SG-009	Hornblende/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 green gahnite versus spinel candidate = 1 spinel.
04JR-SG-010	Hornblende/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 2 grey metal turnings = 2 Pb-metal (contamination). SEM checks from 0.25-0.5 mm fraction: 3 blue-green gahnite versus spinel candidates = 3 spinel (1 Zn-bearing).
04JR-SG-011	Hornblende-almandine/diopside assemblage. SEM check from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel.
04JR-SG-012	Hornblende-almandine/diopside assemblage.
04JR-SG-013	Hornblende-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 2 blue-green gahnite versus spinel candidates = 2 spinel.
04JR-SG-014	Hornblende/diopside assemblage.
04JR-SG-015	Almandine-hornblende/diopside-titanite assemblage. Pyrite is mantled by goethite.

Appendix 10

Pebble Lithology Counts

Abbreviations:

FM	Felsic Metavolcanic
FP	Felsic Plutonic
MM	Mafic Metavolcanic
MP	Mafic Plutonic
MS	Metasedimentary

Shaded samples are ones identified as having heavy mineral/metal contamination.

Sample Number	MS	FP	MP	FM	MM	Sub-rounded	Sub-angular	Angular	% Total Intrusives	% Total Volcanics	% Total Sedimentary
MA-001					36			X		100	
MA-002			25		25			X	50	50	
MA-006					44			X		100	
MA-007		40					X		100		
MA-008		50				X			100		
MA-012		37					X		100		
MA-016			48					X	100		
MA-019				49		X				100	
MA-020					8			X		100	
MA-021	40										100
MA-024					55			X		100	
MA-032	27			15			X			36	64
MA-037		37	15			X			100		
MA-040				33	3	X				100	
MA-041		52					X		100		
MA-046		33	12				X		100		
MA-050					40		X			100	
MA-055		46					X		100		
MA-056		45					X		100		
MA-058	35							X			100
MA-060				36	10			X		100	
MA-069	25			25			X			50	50
MA-073		48				X			100		
MA-074	45						X				100
MA-077		42						X	100		
MA-086	33	17					X		34		66
MA-087		50						X	100		
MA-088	40							X			100
MA-090	47					X					100
MA-103		37					X		100		
MA-112				40			X			100	
MA-114		45				X			100		
MA-120		22		20	5		X		47	53	
MA-140		34			13		X F	X M	72	28	
MA-143		45					X		100		
MA-145					38			X		100	
MA-146				23	23			X		100	
MA-147		41			10		X		80	20	
MA-153		46					X		100		
MA-161		45				X			100		
TM-001	40						X				100
TM-002		28		20			X		58	42	
TM-003	40						X				100
TM-004	14							X			100
TM-005	40						X				100
TM-006	35						X				100
TM-007	40						X				100
TM-008	45						X				100
TM-009	49						X				100
TM-010	30							X			100
TM-012	50						X				100
TM-013	45						X				100
TM-014		50						X	100		

Sample Number	MS	FP	MP	FM	MM	Sub-rounded	Sub-angular	Angular	% Total Intrusives	% Total Volcanics	% Total Sedimentary
TM-015		50					X		100		
TM-017	50						X				100
TM-018		46					X		100		
TM-019		36					X		100		
TM-020			10			X				100	
TM-021	50										100
TM-022		40					X		100		
TM-024		39	8				X		100		
TM-025		39	4				X		100		
TM-027		40	9				X		100		
TM-029	30	14					X			38	68
TM-030	47							X			100
TM-031	45						X				100
TM-032		40	10						100		
TM-033		35	9			X			100		
TM-034		43					X		100		
TM-035		40					X		100		
TM-036		39	12			X			100		
TM-037	35						X				100
TM-039		45					X		100		
TM-040		37					X		100		
TM-041		40					X		100		
TM-042		39					X		100		
TM-046		44	4				X		100		
TM-050	36							X			100
TM-052		50				X			100		
TM-054		55					X		100		
TM-056		9	33			X			100		
TM-057		40						X	100		
TM-064		46				X			100		
TM-065		45					X		100		
TM-067		18	17					X	100		
TM-072	53							X			100
TM-073		48						X	100		

Appendix 11

Summary of Normalized Kimberlite Indicator Mineral Results

Abbreviations:

c	confirmed
Cr	Chromite
DC	Chromian diopside
diop	Diopside
(e)	amount of grains estimated to be in sample
GO	Eclogitic garnet
GP	Pyrope garnet
IM	Ilmenite
KIM	Kimberlite indicator minerals
O	Olivine
(p)	amount of grains picked from sample
tot	total

Shaded samples are ones identified as having heavy mineral/metal contamination.

Sample Number	Selected PseudoKIMs			KIM Count																				Total KIMs	Total KIMs probed				picked estimate normalization	
	1.0-2.0 mm	0.5-1.0 mm	0.25-0.5 mm	1.0 to 2.0 mm						0.5 to 1.0 mm						0.25 to 0.5 mm														
	Low-Cr diop	Low-Cr diop	Low-Cr diop	GP	GO	DC	IM	CR	O	GP	GO	DC	IM	CR	O	GP	GO	DC	IM	CR (p)	CR (e)	O (p)	O (e)		CR	O	CR-kim field	CR-overlap	tot (C) KIM CR	tot (C)O
JR-MA-009	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	80	80		24				77
JR-MA-114	0	1	8	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	27	80	0	0	85			31		92	

Sample Calculation

* *Picked Estimate Normalization*

Example:
For sample MA-009, 80 olivines were estimated to be present but only 25 were picked and sent for microprobe analysis. Microprobe analysis confirmed that 24 were olivines.

The normalization calculation is performed as follows:

$$\# \text{ of normalized grains} = \frac{(\text{estimated } \# \text{ of grains})}{(\# \text{ of picked grains})} \times (\# \text{ of confirmed grains})$$

$$= \frac{80}{25} \times 24$$

$$= 77 \text{ grains}$$

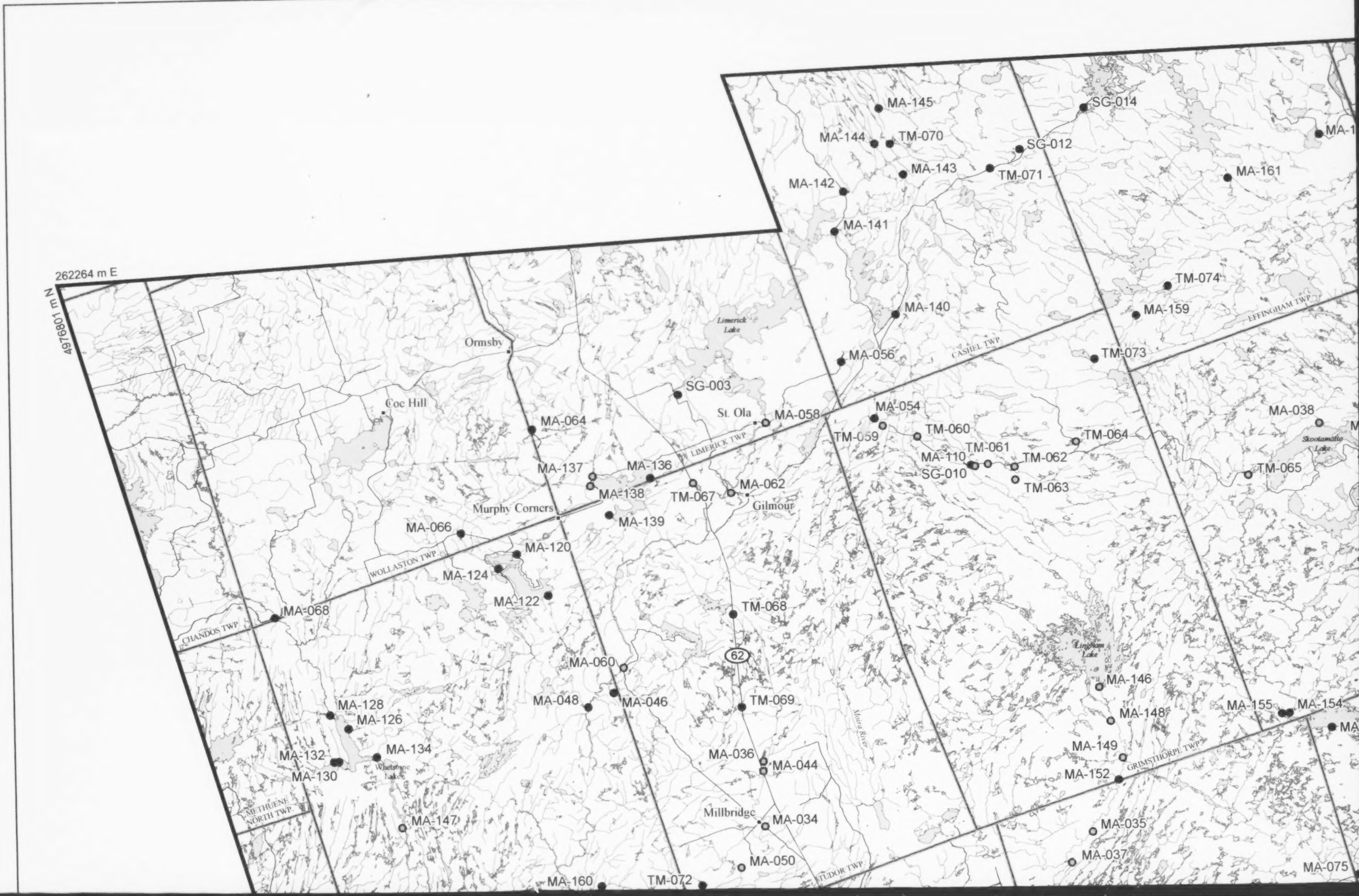
Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
LENGTH					
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
AREA					
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
VOLUME					
1 cm^3	0.061 023	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m^3
CAPACITY					
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
MASS					
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 90**	t
CONCENTRATION					
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

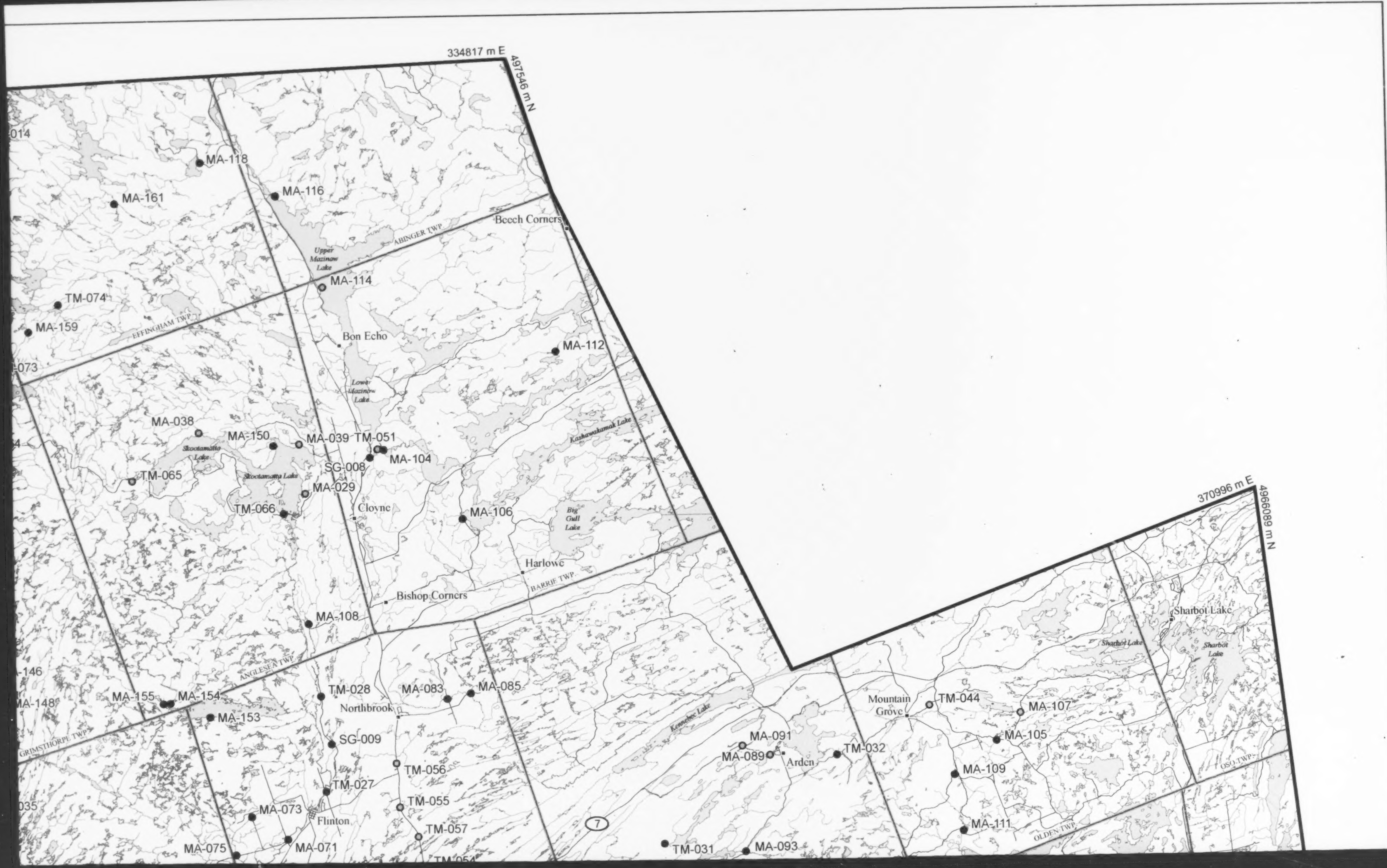
OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.



262264 m E
4976801 m N
MA-145
MA-144
TM-070
SG-014
SG-012
MA-143
TM-071
MA-142
MA-161
MA-141
TM-074
MA-140
MA-159
EFFINGHAM TWP
Limerick Lake
Ormsby
MA-056
CASHEL TWP
TM-073
SG-003
Coe Hill
St. Ola
MA-058
MA-054
MA-038
MA-064
LIMERICK TWP
TM-059
TM-060
TM-064
Skootamatta Lake
TM-061
MA-110
TM-062
MA-137
MA-136
SG-010
TM-065
MA-138
TM-067
MA-062
TM-063
Gilmour
Murphy Corners
MA-139
MA-066
MA-120
WOLLASTON TWP
MA-124
MA-122
MA-068
TM-068
CHANDOS TWP
62
Lingham Lake
MA-060
MA-146
MA-048
MA-046
TM-069
MA-128
MA-126
Moira River
MA-148
MA-155
MA-154
MA-134
MA-132
MA-036
MA-044
MA-149
MA-130
Whetstone Lake
GRIMSTHORPE TWP
MA-152
METHUENE NORTH TWP.
Millbridge
MA-034
MA-147
MA-035
MA-037
MA-050
TUDOR TWP
MA-075
MA-160
TM-072


334817 m E
497546 m N
014
MA-118
MA-116
MA-161
Beech Corners
ABINGER TWP
Upper Mazinaw Lake
MA-114
TM-074
MA-159
EFFINGHAM TWP
Bon Echo
MA-112
073
Lower Mazinaw Lake
Kaskawakamak Lake
MA-038
MA-150
MA-039
TM-051
MA-104
SG-008
Skootamatta Lake
TM-065
MA-029
TM-066
Cloyne
MA-106
Big Gull Lake
370996 m E
4966089 m N
Harlowe
BARRIE TWP
Bishop Corners
MA-108
Sharbot Lake
-146
ANGLESEA TWP
MA-155
MA-154
TM-028
MA-083
MA-085
Mountain Grove
TM-044
MA-107
MA-148
MA-153
Northbrook
Kennebec Lake
GRIMSTHORPE TWP
SG-009
MA-091
MA-105
MA-089
Arden
TM-032
OSO TWP
TM-056
MA-109
TM-027
035
MA-073
TM-055
Flinton
TM-057
7
MA-111
OLDEN TWP
MA-075
MA-071
TM-031
MA-093
TM-054

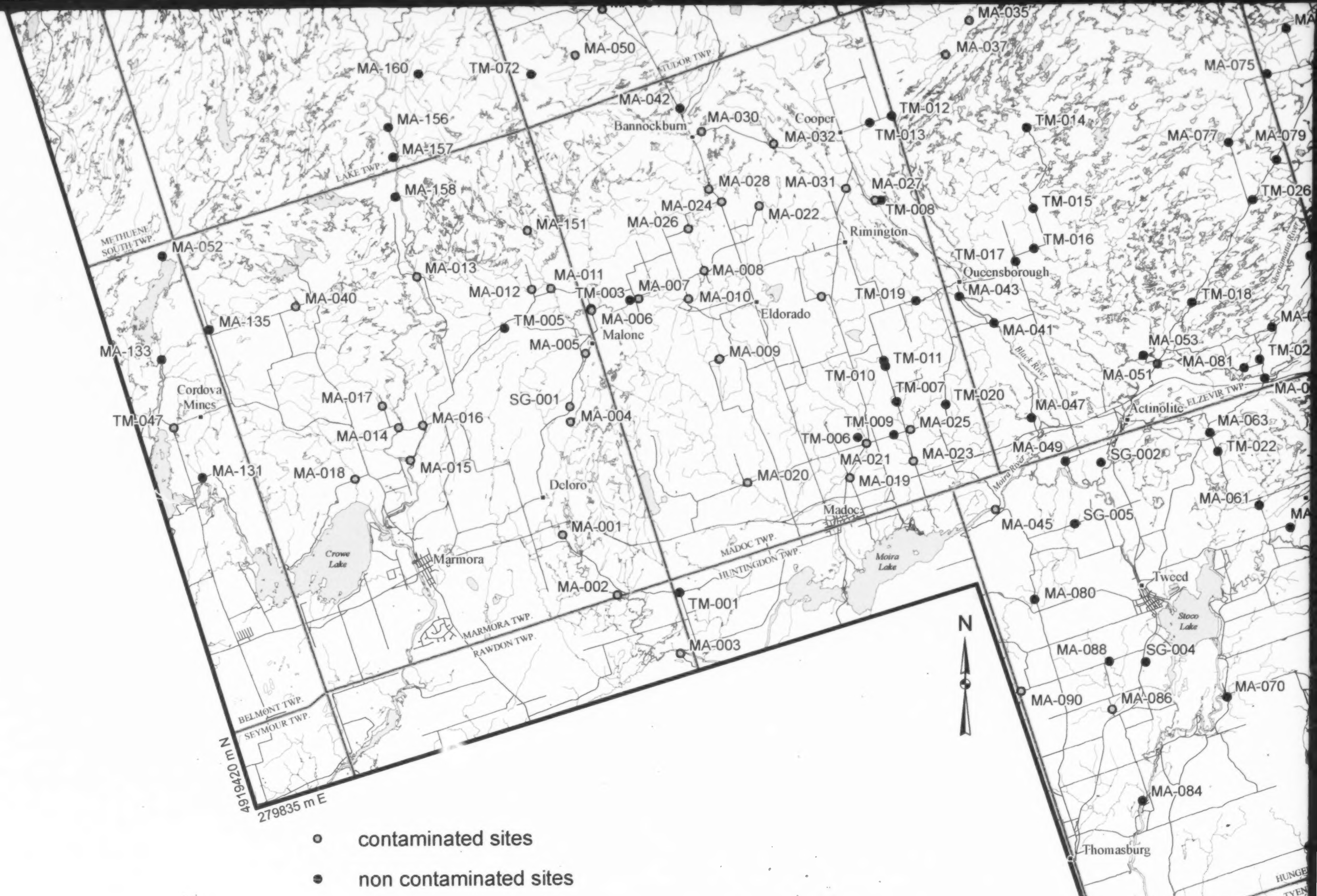
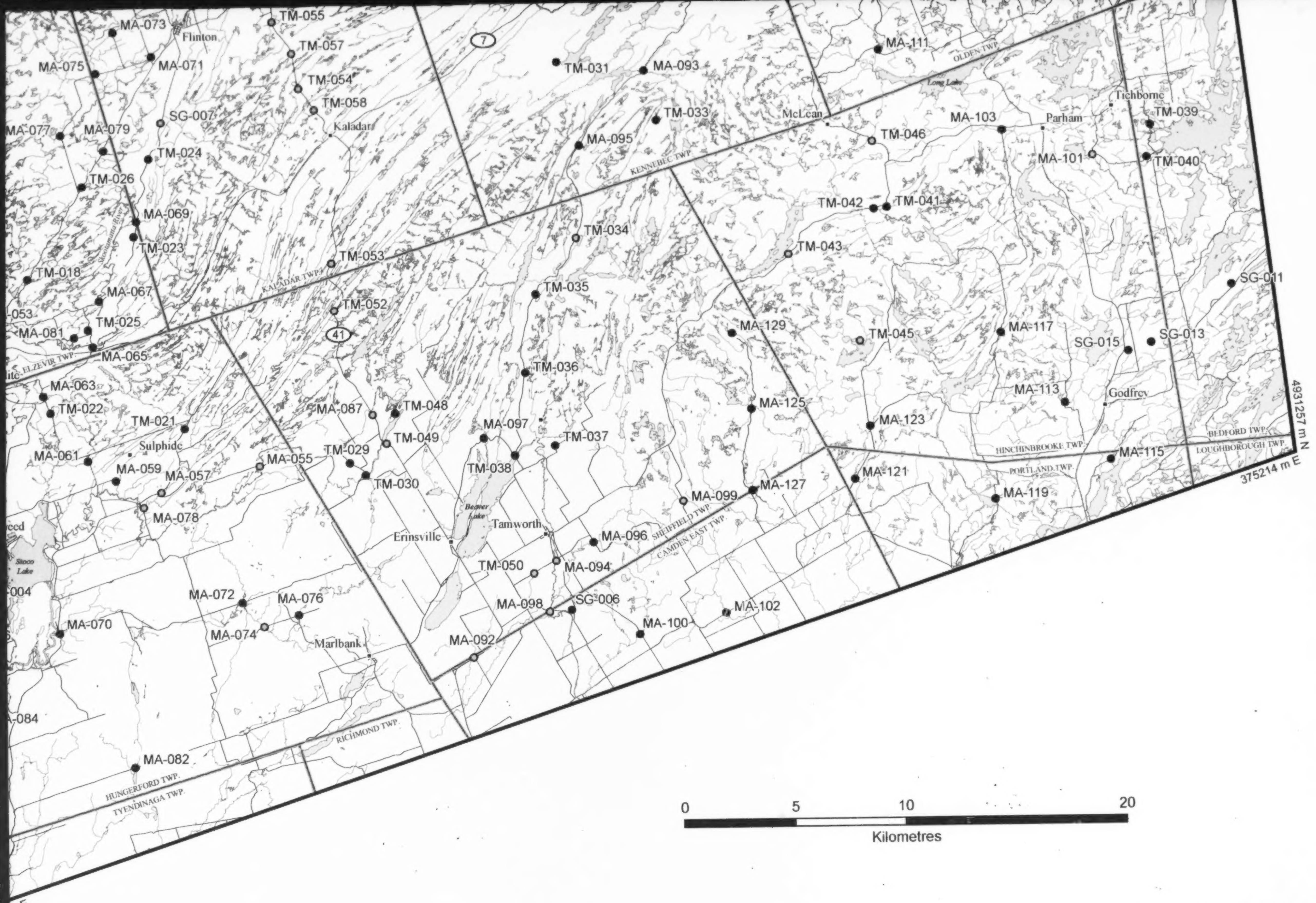

MA-035
MA-037
MA-050
MA-160
TM-072
MA-075
TUDOR TWP.
MA-042
Bannockburn
MA-030
Cooper
MA-032
TM-012
TM-013
TM-014
MA-077
MA-079
MA-156
MA-157
LAKE TWP.
MA-158
MA-028
MA-031
MA-027
TM-008
MA-024
MA-022
MA-026
MA-151
TM-015
TM-026
METHUENE SOUTH TWP.
MA-052
Rimington
TM-016
TM-017
Queensborough
MA-013
MA-011
MA-008
MA-012
TM-003
MA-007
MA-010
TM-019
MA-043
TM-018
MA-040
Eldorado
MA-135
TM-005
MA-006
Malone
MA-041
Black River
MA-005
MA-133
MA-009
TM-011
MA-053
MA-051
MA-081
TM-010
Cordova Mines
TM-007
TM-020
MA-047
Actinolite
ELZEVIR TWP.
MA-017
SG-001
MA-016
MA-004
TM-047
TM-009
MA-025
MA-063
MA-014
TM-006
TM-022
MA-049
SG-002
MA-021
MA-023
MA-015
MA-131
MA-018
MA-020
MA-019
Moira River
MA-061
Deloro
Madoc
MA-045
SG-005
MA-001
MADOC TWP.
Crowe Lake
Marmora
HUNTINGDON TWP.
Moira Lake
Tweed
MA-002
TM-001
MA-080
MARMORA TWP.
RAWDON TWP.
Stoco Lake
N
MA-003
MA-088
SG-004
MA-070
MA-090
MA-086
BELMONT TWP.
SEYMOUR TWP.
4919420 m N
279835 m E
MA-084
Thomasburg
Roslin
4910984 m N
314803 m E
○ contaminated sites
● non contaminated sites

Figure 2. Sample site location map.



MA-073
Flinton
TM-055
TM-057
MA-075
MA-071
TM-054
TM-058
SG-007
Kaladar
MA-077
MA-079
TM-024
TM-026
MA-069
Skootamatta River
TM-023
TM-018
MA-067
-053
TM-025
MA-081
MA-065
ELZEVIR TWP.
KALADAR TWP.
TM-053
TM-052
41
7
TM-031
MA-093
TM-033
MA-095
KENNEBEC TWP.
TM-034
MA-111
OLDEN TWP.
Long Lake
McLean
TM-046
MA-103
Parham
Tichborne
TM-039
MA-101
TM-040
TM-042
TM-041
TM-043
SG-011
TM-035
MA-129
TM-045
MA-117
SG-015
SG-013
TM-036
MA-063
TM-022
MA-087
TM-048
TM-021
MA-097
TM-049
TM-037
MA-113
Godfrey
MA-125
MA-123
Sulphide
MA-061
TM-029
MA-055
TM-038
TM-030
MA-059
MA-057
HINCHINBROOKE TWP.
BEDFORD TWP.
LOUGHBOROUGH TWP.
PORTLAND TWP.
MA-115
MA-121
MA-127
MA-099
MA-119
MA-078
Beaver Lake
Tamworth
Erinsville
MA-096
SHEFFIELD TWP.
CAMDEN EAST TWP.
TM-050
MA-094
Stoco Lake
-004
MA-072
MA-076
MA-098
SG-006
MA-102
MA-070
MA-074
MA-100
Marlbank
MA-092
-084
RICHMOND TWP.
MA-082
HUNGERFORD TWP.
TYENDINAGA TWP.
0
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10
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Kilometres
4931257 m N
375214 m E
m E

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